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ABSTRACT

The "International Journal of Educology" publishes works that examine the educational process from an educological perspective. The term educology means knowledge about education and has been in use since the seminal work in educology by L. W. Harding in the 1950s. The educological perspective is inclusive of scientific, praxiological, historical, and philosophical discourse about the educational process. Volume 1, Number 1 includes four articles considering theory and structure in education and educology in relation to curriculum models, the information society, and handicapped students. Volume 1, Number 2 covers historical and economic aspects of educology in five articles. Volume 2, Number 1 presents an editorial and six articles that relate educology to politics, society, economic conditions in Australia, culture, teaching, and science concepts. Volume 2, Number 2 contains an editorial and five articles focused on educology in relation to socio-cultural factors, democracy, effective schools, and testing and student attitudes about test formats. Volume 3, Number 1 contains an editorial and five articles discussing teacher education, staff development, teaching methods, and curriculum analysis. A guest editorial and eight articles in Volume 3, Number 2 focus on various issues related to educology, a national curriculum, and school-based management. In Volume 4, Number 1, an editorial and five articles consider curriculum and policy issues. Volume 4, Number 2 contains an editorial and eight articles focusing on teacher education. Volume 5, Number 1 contains an editorial and eight articles discussing such aspects of educology, as an educological model for developing countries, an educology for science, a philosophical educology, and an educology of poverty. (SLD)

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A Journal of Research, Inquiry and Development about the Educational Process from an Educological Perspective

1987, Volume 1, Number 1

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INTERNATIONAL JOURNAL OF EDUCOLOGY
Volume 1, Number 1

Editors

James E. Christensen, Riverina Murray Institute of Higher Education, Wagga Wagga, NSW, Australia
James E. Fisher, University of South Carolina, Columbia, South Carolina, USA

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David Thomas, Flinders University, Bedford Park, South Australia
John Williamson, Western Australian Institute of Technology, Bentley, Western Australia
Bevis Yaxley, University of Tasmania, Hobart, Tasmania, Australia

The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563). It is published biannually (January and July) by Educology Research Associates. The Journal publishes works which examine the various features or aspects of the educational process (e.g., curriculum, supervision, administration, counseling, teaching, studying, learning) from an educological perspective. The educological perspective treats the educational process as the dependent variable. It views other factors (e.g., social expectations, economic arrangements, political situations) in terms of how they influence the educational process. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of the mind; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes.

The term 'educology' means knowledge about education, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s. The discipline requisite for forming educology includes that which is necessary for conducting analytic, empirical (experimental and non-experimental) and normative (or evaluative) inquiry. The educological perspective is inclusive of scientific, praxiological, historical and philosophical discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studies of educology, one can develop educological understanding towards the ends of heightened sensitivity for educational situations, effective performance within educational situations and the ability to espouse sound theory about educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counseling, educational administration) and which use a variety of appropriate approaches to research and inquire, including: normative, analytic and empirical; experimental and non-experimental; historical and philosophical; interpretive, critical and evaluative; scientific and praxiological. Contributers seeking publication of manuscripts should submit four copies of each manuscript. They should assure that manuscripts are typed with double vertical spacing on one side of A 4 sized paper (210 x 297 mm. or 8 ½ x 11 in.) with uniform margins (3 cm. or 1 in., both sides, top and bottom). The author's name, professional title and affiliation, address and telephone number should appear only on a separate title page to ensure anonymity in the reviewing process. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on page 1. No specific length of manuscript is preferred. Manuscripts, editorial correspondence and inquiries about submission should be sent to: The Editors, *The International Journal of Educology*, Educology Research Associates, Box 383 GPO, Sydney, NSW 2001, Australia.

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EDUCATION, EDUCOLOGY AND EDUCOLOGICAL DISCOURSE: THEORY AND STRUCTURE FOR EDUCATION AND CONSTRUCTIVE ACTION IN EDUCATION

James E. Christensen
Riverina Murray Institute of Higher Education
Wagga Wagga, NSW

Language *in* Education and Language *about* Education

There is language in the form of talk and writing within the educational process. Consider this example. Michael is a single parent who lives in Brisbane. He works as an insurance salesman, and he has one child, a daughter, Janet, who is just over two years old. Here is a conversation between them.

Janet	**Michael**
Cat! Cat!	
	Did you see the cat? Daddy doesn't see the cat. Where is it?
Cat gone. All gone.	
	Daddy doesn't see the cat. Did the cat go away?
See cat!	
	Where did the cat go? Drink your juice now.
Juice!	
	That's right, drink your juice.
Drink? Cat! Cat!	
	Finish your juice.
Finish. Juice all gone.	
	Good. You've finished your juice. Your juice is all gone.

Janet and Michael's conversation exemplifies language within the educational process, or the language *in* education. There is also language, again in the form of talk and writing, *about* the educational process. The language within the educational process constitutes educational language, or *educational* discourse. The language about the educational process constitutes *educological* language, or *educological* discourse.

The Educational Process

From an educological viewpoint, we can characterise the conversation between Janet and Michael as typical of the educational process. Janet is playing the role of student, and Michael is playing the role of teacher. The content which they are studying and teaching is the syntax (order), semantics (meaning) and grammar (inflections) of the English language. The setting is the social milieu of the single parent family and the cultural milieu of urban Australia.

The teaching methods which Michael uses include modelling, asking questions and giving directives. We can note that Janet's sentences are much shorter than Michael's -- one, two or three words. Michael extends the sentences and puts in all of the words required for correct grammatical, syntactical and semantic use of the language. This provides a model for Janet to imitate, reduce, reconstruct and transform into new sentences. Janet's study methods include imitation, practice, reduction, reconstruction and transformation. Michael's teaching style is fatherly, caring and supportive, while Janet's study style is natural, unselfconscious and spontaneous. Michael does his teaching as a matter of course, without being selfconscious of his teaching. This is both an interesting and significant point, because it illustrates that it is possible to act intentionally without being fully selfconscious the whole time of the intentionality. This occurs especially when the intentional action has become integrated into a person's patterns of conduct and of thought in the form of habits. The same is true of Janet's studying. Intentional, unselfconscious performances are what Janet and Michael are undertaking with each other in the studying and teaching of language. It is part of Michael's set of habits to expand what Janet says into full, syntactically, grammatically and semantically correct sentences. His intention is to help Janet to develop her ability to make such sentences, even though he may not be selfconscious of his intentionality because it has become habit. In turn, Janet accepts his guidance and uses it, sometimes unselfconciously and sometimes consciously, to signify meaning with her words. All of the elements for an educational transaction are present: teacher, student, content and setting (social and cultural).

Educological Discourse and the Educological Perspective

The discourse in the above paragraph which characterises Michael and Janet's conversation as an educational episode exemplifies language *about* education. It exemplifies *educological* language, as distinct from *educational* language. It is discourse which classifies, describes and explains human transactions in terms of teaching, studying and coming to know with guidance and intentionality.

The same set of human transactions can be characterised from many different points of view. Janet and Michael's conversation, for example, could be characterised sociologically, with consideration given to the patterns of socialisation, the formation of social class identity, the development of notions of sexual role, the establishment of sense of status. Their conversation could be characterised psychologically, and such discourse might consider factors such as affection, motivation, bonding, conditioning and control. These different viewpoints are essentially arrangements of discourse. Each arrangement has its special set of terms (vocabulary) for the discernment of salient features of a situation, and each arrangement has its set of explanatory principles for organisation of the facts which the discourse establishes into systems and funds of warranted propositions.

Janet and Michael's conversation is a small part of a much larger field of phenomena to which we point with the term 'education'. Not only Janet and Michael's conversation, but the entire field can characterised from many different points of view (or arrangements of discourse). Economics as an arrangement of discourse describes and explains education in terms of the influence of the educational process upon production and distribution of goods and services. The discourse which is anthropology characterises education from the point of view of how it affects the process of enculturation, the maintenance of a culture and the development of cultural change. Each of these points of view (or arrangements of discourse) treats the educational process as an independent variable. It is an adjunct concern. The central concern is some other factor, e.g., social organisation, cultural formation and maintenance, economic production and distribution, attitudes and behaviour.

In contrast to other viewpoints (in the sense of arrangements of discourse), the educological perspective treats the educational process as the dependent variable, and it is used to conduct research and inquiry about the effects of other factors, such as social settings, economic activity and political attitudes, upon the educational process.

Of course, regardless of how a field of phenomena is described or characterised, that field remains unchanged. Talk about the way a plant uses sunlight, water and soil to grow does not affect the plant in its use of those things. We can use that talk, however, to take effective action in relation to a plant to influence its growth. And so it is with the different arrangements of discourse (or viewpoints) about the educational process. None of the arrangements (sociology, anthropology, psychology, educology, etc.) changes the function of the educational process. All can be used to take some kind of action in relation to the educational process.

Education and Educology

So, there is the educational process, and there is the set of warranted assertions (propositions in the form of declarative sentences) about that process. That set of warranted propositions which treats the educational process as the dependent variable, and not some adjunct concern (not as an independent variable), constitutes educological discourse.

Within the educational process, we find people teaching and studying some content within some physical, social and cultural milieu. A Kamba child in Kenya shows his brother how to plant millet seed at the proper depth and the appropriate time of year in the plot adjacent to their home, and his brother practises under his supervision until he can do the job independently of his guidance. This exemplifies education. The teacher is the child. The student is his brother. The content is principles of millet sowing and cultivation. The physical setting is rural Kenya in the Kamba district. The social milieu is the extended family. The cultural milieu is that of the Kamba people within modern Kenya.

The characteristic form of the educational process consists of the four components of teacher, student, content and setting. Other elements which derive from these basic four include intentions of teachers and students, strategies and methods of teachers and students, teachers' and students' styles, physical resources and language. The characteristic functioning of education is teaching, studying and (if all goes well) guided intentional learning. Teaching is essentially the intentional provision of opportunities for someone to learn some content. Studying is essentially making use of opportunities to learn some content. The content may be propositions, such as, "All animals may be classified as vertebrates or invertebrates." It may be attitudes, such as competitiveness, cooperativeness, defensiveness, charitability, individuality. It may be funds of knowledge (warranted assertions) organised into systems of knowledge, such as virology, toxicology, criminology, oceanography. It may be procedural knowing, such as how to tie a square knot, drive a tractor, solve a linear equation, prune roses, perform an appendectomy or find the area of a square. The content may be how to conduct sound inquiry with due regard for necessary and sufficient evidence. The social milieu in which education might take place includes, for example, peer groups, families, social parties, schools, universities, work places. The cultural milieu for education might be, for example, Australian culture, French culture, Canadian culture, etc. In short, education is a process which has both form (teacher, student, content, setting) and function (teaching, studying and intentional guided learning), and it is to be discerned within the functions and transactions of all people.

In contrast to the process of education, there is recorded propositional knowledge (warranted assertions) about education. It is to be found in books, audio tapes and other media suitable for recording propositions. Examples of knowledge about education are the true statements (warranted assertions),

(1) . . . teachers are very active participants in classroom events (Doyle in Wittrock, 1986: 399),

(2) Any classroom contains two interpenetrating worlds: the official world of the teacher's agenda, and the unofficial world of the peer culture (Cazden in Wittrock, 1986: 451).

(3) It is wrong for teachers to victimise their students.

Any assertion which can be shown to be warranted by adducing necessary and sufficient evidence counts as a true proposition (or knowledge). Of course not all warranted assertions are about the educational process, but those which are can be assembled and arranged into a collection or fund of knowledge about the educational process. That fund can be given system by arranging its assertions in relation to explanatary principles, or theories.

Justification for the Term *Educology*

Within common usage of the English language and also within special usages (i.e., technical usages) of that language, we employ several terms to name the fund of recorded knowledge about education. Included among those terms are 'pedagogy', 'andragogy', 'ethology', 'Education', 'Professional Education' and 'psychopedagogy'.[1] However, there is one term which performs the job of naming the fund of knowledge about education even better than these five, and that is the term 'educology'.[2] It suits the job best for three reasons:

(1) It names nothing less than the fund of knowledge about education.
(2) It names nothing more than the fund of knowledge about education.
(3) It avoids conflating the educational process with recorded propositional knowledge about that process.

Educology implies the inclusion of the entire fund of recorded propositional knowledge about the entire process, from early childhood through senescence. It is not limited only to knowledge about the education of children (pedagogy)[3] or to that of male adults (andragogy).[4] It is not recorded knowledge about processes other than education such as knowledge about character development (ethology)[5] or a combination of psychological knowledge and the practice of teaching (psychopedagogy).[6] The name 'educology' eliminates the ambiguity which is created by naming the process of guided study 'education' and naming the fund of recorded propositional knowledge about that process with the same term, 'education'.

The practice of capitalising the term 'education' and of adding the term 'professional' to the term 'education' are attempts to remove this ambiguity, but the use of these two terms ('Education' and 'Professional Education') are not nearly as cogent in dispelling the ambiguity as is the use of the term 'educology'. This can be illustrated with, for example, the sentence,

> In their education to qualify as primary school teachers, students study some psychology, sociology and *education*.

The ambiguity created in the meaning of the sentence can be reduced with some substitutions of the second term 'education':

(1) In their education to qualify as primary school teachers, students study some psychology, sociology and *Education*.

(2) In their education to qualify as primary school teachers, students study some psychology, sociology and *Professional Education*.

(3) In their education to qualify as primary school teachers, students study some psychology, sociology and *educology*.

Each of the term substitutions reduces the ambiguity progressively. The third term substitution reduces the ambiguity most efficaciously, removes the anomalies in conventions for capitalisation and conforms with the the convention for naming funds of knowledge with the suffix of '-logy': for example, 'psychology' from 'psyche' (mind) plus '-logy' (knowledge about); 'sociology' from 'society' plus '-logy'; 'educology' from 'education' and '-logy'.

There are at least three sound reasons for creating new terms in the language. A new term is indicated when a new meaning arises for which there is no satisfactory existing term. It is indicated when a meaning is misnamed by current usage. And a new term is called for when current usage is ambiguous. The case for the term 'educology' is supported by all three reasons. The term 'education' functions ambiguously to name the process and warranted assertions about the process. It is a misnomer to name warranted assertions about the educational process with the term 'education'. (It is like using the term 'animals' to name zoology; it is a category mistake.) The term 'educology' names a new meaning for which there is no satisfactory existing term.

So, what is this new meaning? How is it related to the educational process? And how is it connected with already established concepts such as those of 'educational psychology', 'educational philosophy' and 'educational sociology'?

Educology: Its Meaning

The argument thus far is that educology consists of warranted assertions about any and all aspects of the educational process, and educology is an arrangement of warranted assertions which characterises the educational process as the dependent variable. Warranted assertions are intended in the sense of statements which have necessary and sufficient evidence to affirm their truth value as either necessarily true or highly probably true. That is, affirmation may arise from a relationship between the assertion and the evidence in which there is a high degree of correspondency. This correspondency builds the case for a high degree of confirmability for the assertion, and the truth value of the assertion is one of high probability. Affirmation of an assertion can also derive from necessary implication. An assertion has a relationship of coherency with the evidence of another assertion. The truth value of the assertion is one of necessity, without exception. Such warranted assertions are necessarily true.

Warranted eEducological assertions may be about those who play the role of teachers (such as uncles, aunts, friends, university professors, primary school teachers) or of students (such as children, adults, clerks, bankers, university students, primary school pupils). They may be about content which is taught and studied (such as how to construct fences, the evils of war, mechanical physics, standard procedures for preparing an aircraft for takoff, how to repair a lawnmower). Educology also consists of warranted assertions about the influences (constructive, destructive, reconstructive) of the milieu in which teaching and studying take place upon the processes of teaching and studying. That milieu includes physical, social and cultural features.

Just as education (i.e., the process of teaching some content in some social and cultural milieu) is not psychology, or sociology, or anthropology, or philosophy, so it is with educology. Education is not educology, any more than animals are zoology, plants are botany or music is musicology. Fields of phenomena are one thing. Recorded funds of propositional knowledge (warranted assertions) about those fields are another.

Forming Educology

Forming educology is essentially making warranted assertions about education, and educology is extended through the addition of warranted assertions to the already previously established fund of warranted assertions about education. We extend the fund of warranted assertions about education through successful inquiry. Such inquiry implies the research activities of asking, answering and adducing the appropriate, necessary and sufficient evidence to support answers to the questions asked. The search implied in the asking may be directed towards finding propositions which are already affirmed (a retro-searching). It may be directed towards reaffirming or disaffirming propositions which have already been affirmed (a re-searching). Or it may be directed towards affirming or negating propositions which have not yet been affirmed (a neo-searching).[7] In either of the three cases, well disciplined inquiry follows sound rules for adducing necessary and sufficient evidence and for drawing supportable inferences. This set of rules, logical operations and procedures constitutes the discipline for the inquiry. When the inquiry is successful (and if the inquiry is a neo-searching), new propositions about education are affirmed. The fund of knowledge about education is augmented. Educology is extended.

Discipline Requisite for Forming Educology

Although related, a fund of recorded propositional knowledge is not identical with the discipline used to produce that fund, no more than a house is the same as sound rules for home construction, nor the activity of playing tennis is the same as rules for tennis play. The activity of asking, answering and verifying answers to questions is inquiry. The rules of proof (or the standards of verification) which are followed in the inquiry constitute the discipline. The inquiry can be a retro-search, a re-search or a neo-search. The product of the inquiry, if successful, is a set of warranted assertions about education, i.e., a rediscovery, a revision or an addition to the fund of knowledge about education.

Educology is formed by the use of at least three disciplines, viz., those requisite for empirical, normative and analytic inquiry. That is, the formation of educology requires the use of at least three sets of rules for inquiry: those for forming empirical knowledge claims, those for normative ones and those for analytic claims. Knowledge claims, here, are intended to mean propositions which are asserted to be warranted.

Empirical knowledge about education is the set of propositions or statements which is verified by observing actual events within a field of phenomena and determining whether the statements match or correspond with the events. Observation can be achieved by extrospection and introspection. Extrospection is observation by means of the five sense organs. That which is detected by this process is the evidence of physical entities, situations and processes, e.g., teacher behaviour, student behaviour, classrooms, equipment. Introspection is observation by means of other than the five sense organs. That which is detected by this process is the evidence of mental objects, e.g., one's own emotions, one's own imagined images and sounds, one's own anticipations. The statement,

> The pupil dropped his pencil five times during the teacher's five minute explanation,

is an empirical proposition which is verifiable by extrospection. The statement,

> The pupil who dropped his pencil so many times felt bored,

is an empirical proposition verifiable by introspection. Of course, the pupil is the only one in a position to introspect into his own emotional state to detect that boredom. Others might infer his boredom from what they extrospect, but only he can introspect his own emotional state. Techniques of inquiry required for affirmation of empirical assertions include experimentation, quasi-experimentation, surveys, participant observation, ethnographic observation, naturalistic (non-experimental) observation. By its nature, empirical knowledge is problematic. It is probably true, not necessarily true, and it is true by virtue of a high degree of confirmability, a high degree of corroboration and the absence of disaffirmation. The relationship between empirical assertions and the evidence which warrants them is one of correspondence. Various statistical analyses can be made to compute to what degree an empirical statement is probably true or corresponds with its evidence. The statistical assertions which are produced from statistical analyses, however, are not empirical assertions. They are analytic assertions.

Analytic knowledge about education is the set of propositions or statements which is verified by using necessity reasoning to infer whether the statements are consistent with other statements. We examine the meanings and necessary implications of a statement in relation to a set of other statements and judge whether the statements cohere with each other. The relationship between analytic statements and the evidence which warrants them is one of coherency. Examples of analytic propositions are the statements,

> (1) Education implies teaching,
>
> (2) Teaching implies the intention for someone to learn something, but learning does not imply teaching,
>
> (3) The correlation between teacher praise and student achievement of intended learning outcomes is 0.41.

(In the third example, the statement which describes the incidents of teacher praise and the statement which describes the students' achievement of intended learning outcomes would be empirical statements, verifiable by observation; but the statement which describes the correlation of 0.41 is one which results from computational analysis, and therefore is an analytic statement.) Analytic inquiry, if successful, produces analytic statements which are necessarily true (not probably true). Techniques of inquiry required for affirmation of analytic assertions include concept isolation, definition, explication, model case, contrary case, borderline case, term substitution, invented case, propositional analysis and statistical analyses (correlation, analysis of variance).

In addition to empirical and analytic knowledge, there is normative knowledge. Normative knowledge about education is the set of propositions or statements which is verified by using evaluative reasoning to infer whether the statements being asserted are consistent with sound values. We form agreement with a normative statement by establishing some set of norms or values and deriving some set of criteria (either standards or rules or both) to which we are willing to commit ourselves, or to live by. We observe whether behaviour, practices, events, goals, policies, relationships or situations conform to the criteria, and we make inferences about the goodness or badness or the relative goodness or badness of such behaviours, practices, etc. Examples of normative propositions are the statements,

(1) Teachers should treat all students fairly and without prejudice with respect to race, religion, gender, ethnic identity or national origin,

(2) Teachers should never victimise their students, nor should students victimise their teachers,

(3) A situation in which the teacher and the students are happy with each other is a good state of affairs.

Normative assertions require two sorts of relationships between themselves and the evidence which warrants them. They require a relationship of coherency between themselves and the evidence of other statements. (In other words, there needs to be an absence of contradiction.) They also require a relationship of adherency between the norms or values from which the assertions are derived and the people who are advocating or living by those norms. (In other words, there needs to be an absence of hypocrisy and a genuine commitment to the norms.) Normative inquiry requires the use of techniques such as value or norm clarification, value validation, value vindication and rational choice among alternative ways of life.[8] If successful, normative inquiry forms normaknowledge about education. Such knowledge is warranted assertions about good and bad (or relatively good and bad) states of affairs in the field of educational phenomena.

Demands upon the Educological Researcher

The educological researcher must master all three disciplines in order to conduct well disciplined inquiry about the educational process. In order to settle questions of meaning, the educological researcher must be able to use appropriate analytic discipline. To settle questions of value (good or bad, better than or worse than, best or worst), the researcher must be able to use techniques of normative inquiry. To settle questions of what exists, what prevails, what works, the researcher must be able to use techniques of empirical inquiry. During the course of conducting any inquiry, the educological researcher will have cause to use all three disciplines in a coordinated, systematic and appropriate way, for the researcher will constantly be confronted with questions of meaning, of value and of extant situations within the field of educational phenomena.

Organisation of Educology

The fund of warranted assertions which constitues educology can be organised from several viewpoints. These viewpoints are essentially arrangements of assertions. One possible organisation is the arrangement of assertions so that they characterise (or are about) extant educational phenomena. A second arrangement is one which characterises effective educational practices. The first arrangement of statements consists of propositions about existing features, relationships, conduct and situations within the process of teaching, studying and guided intentional learning. The second arrangement consists of propositions about educational praxis, i.e., praxis in the sense of the set of activities which need to be performed and refrained from performing in order to achieve the results which we want in the process of teaching and studying. These performances may be studying activities as well as teaching activities. The first arrangement of educology is scientific educology. The second arrangement is praxiological educology.[9]

Praxiology is the same as the fund of recorded propositional knowledge about effective practices, procedures or methods for doing something. Praxiology includes technology and more than technology, for it is also the recorded fund of knowledge about how to achieve desired results which are other than a physical object. For example, praxiology includes knowledge about how to maintain mental health, how to argue effectively a legal case or how intentionally to increase the probability that someone will learn something. There could be the praxiology of health, legal praxiology and many other categories of praxiology, but out immediate concern is praxiological educology. It addresses questions such as,

(1) What teaching methods are effective in maximising the probability that 9 year olds will develop an understanding of the relationship between vibration and sound?

(2) Which procedures will most likely engender motivation among female pupils to engage enthusiastically in the study of physics?

In contrast, scientific educology addresses questions such as,

(1) What teaching methods are most commonly used in language arts?

(2) How do the different attitudes of teachers affect the motivation of female students in the study of physics?

The focus of scientific educology is upon what is, what exists, what prevails. It describes and characterises extant or existing states of affairs, entities, relationships and situations within the educational process. Existing states of affairs within the field of educational phenomena contrast with effective practices in these ways. An educational practice can be effective, yet not be in current use, thus not an extant state of affairs. Educational practices, moreover, can be ineffective and in current use, thus are an extant state of affairs. Scientific educology is the fund of knowledge about extant states of affairs within education. Praxiological educology is the fund of knowledge about effective practices for education, regardless of whether those practices are currently extant within the educational process. Both arrangements of warranted assertions, the scientific and the praxiological, are part of educology. Both require the use of the same set of three disciplines (empirical, normative, analytic) for affirmation of the truth value of the assertions. The two arrangements of assertions differ with respect to the feature or aspect of educational phenomena which they describe, explain and characterise.

The effective practices which praxiological educology describes and characterises have extrinsic goodness, but not intrinsic goodness. For example, educologists might find that malicious and cruel treatment are effective in maximising the probabilities that someone might learn something. Yet the effectiveness of these treatments would not be sufficient justification to use them as educational practices. This distinction between extrinsic and intrinsic goodness within educational phenonomena makes another arrangment of warranted assertions about education possible: normative philosophical educology. It is the same as normative knowledge about education or normative philosophy of education. This arrangment of educology again requires the use of the three disciplines (analytic, normative, empirical). Questions of what is desirable and undesirable for and in the educational process (normative questions) lead on to questions of meaning (analytic questions) and questions of the actual consequences of actions or practices (empirical questions). To settle normative questions competently, one must also be able to settle questions of meaning and questions of actual consequences. Philosphical educology addresses questions such as,

(1) Is an inquiry approach to the teaching of natural sciences a better one than an expository approach?

(2) Should corporal punishment be forever banished from schools?

Like scientific and praxiological educology, normative philosphical educology is part of educology. It requires the use of the same disciplines for affirmation of its propositions. It differs from the other two arrangements of assertions with respect to the feature or aspect of educational phenomena which it characterises. Its focus is upon desirable and undesirable or relatively desirable and undesirable states of affairs, relationships, entities, practices, situations and the like within the educational process (and for the educational process).

Normative philosophical educology is closely related to philosophy of education, but it is not identical with it. Often the term 'philosophy of education' is used without distinguishing between normative and analytic philosophy. This usage conflates different arrangements of knowledge. Analytic philosophy of education (or analytic philosophical educology) is an arrangment of warranted assertions which describes and characterises the necessary implications of concepts and sentences used in the language of education. Normative philosophy of education (or normative philosophical educology) describes and characterises that which has worth in education. The theorising of Dewey, Bayles and Butler, for example, counts as normative philosophy of education.[10] The theorising of Ryle, Scheffler, Smith and Gribble, for example, is analytic philosophy of education.[11]

Relevant to this explication of philosophy of education is the concept of 'language of education'. The point has already been made that the term functions ambiguously. It can mean (1) 'language which occurs within the process of teaching and studying', and it can mean (2) 'language which is about the process of teaching and studying'. In its first sense, language of education means language *in* education. In its second sense, it means language *about* education. These two senses can be distinguished by subscripts:

(1) $[\text{language of education}]_1$ is language *in* education;

(2) $[\text{language of education}]_2$ is language *about* education.

What a person says while engaged in the role of teaching or in the role of studying under guidance are examples of $[\text{language of education}]_1$, or language *in* education. Educology is $[\text{language of education}]_2$ or language *about* education, that is, educology is language about education which is warranted with evidence. Not all language (or assertions) about education is warranted with evidence.

Given the distinction between two senses of language of education, a third meaning of philosophy of education is possible to discern. Language about education can be an object of inquiry, or something about which inquiry can be conducted. It can be analysed, and true statements about it can be produced. This set of true statements, or warranted assertions, constitutes a fund of knowledge. That fund includes the logic, epistemology, ethics and praxiology of making warranted assertions about the educational process. The fund includes that which is named by the term 'research methods' or 'research methodologies', for research methodologies about the educational process is included in the praxiology of *educology* (vs. the praxiology of *education*).

In common usage, the logic and epistemology of forming warranted assertions about the educational process is philosophy of education, because in common usage, the term 'education' names (1) the teaching and studying process and (2) knowledge about that process. But a name which more adequately characterises the fund is the term 'philosophy of *educology*.[12] The substitution of the term 'educology' for the term 'education' in the name of 'philosophy of education' clarifies the point that the object of knowledge (i.e., that which the knowledge focuses upon or describes) is language *about* education.

In summary, then, four meanings of the term 'philosophy of education' can be discerned:

(1) analytic philosophy of education, or the fund of knowledge about meanings of concepts and propositions in educational language, or language in education; this fund is analytic philosophical educology);

(2) normative philosophy of education, or the fund of knowledge about worthwhile states of affairs in the educational process; this fund is normative philosophical educology;

(3) analytic philosophy of *educology*, or the fund of knowledge about the meaning of concepts and propositions in educological language, or language *about* education;

(4) normative philosophy of *educology*, or the fund of knowledge about worthwhile states of affairs in educology (in language *about* education).

The first two are subfunds of educology. The third is knowledge about educology, not about education. Therefore, it is meta-educology, or knowledge about knowledge about education.[13]

Relationship of Educology to Psychology of Education, Sociology of Education and Anthropology of Education

How is educology related to the psychology of education, sociology of education and anthropology of education? In one sense, educology includes these three funds of warranted assertions, and in a second sense, it excludes them. For example, the term 'sociology of education' functions ambiguously. At times, it is used to mean 'knowledge about the effects of education upon society'. At other times, it is used to mean 'knowledge about the effects of society upon education'. Knowledge which treats society as the dependent variable and which characterises the effects of other factors upon society is sociology. Knowledge which treats education as the dependent variable and which characterises the effects of other factors upon education is educology. The first sense of the term 'sociology of education' implies an arrangment of sociology (or a subfund of sociology). The second sense of 'sociology of education' implies an arrangement of educology (or a subfund of educology). A better name for this second sense is the term 'educology of society'. The two senses of the term 'sociology of education' can be distinguished by a set of subscripts:

(1) $[\text{sociology of education}]_1$ is

(a) warranted assertions (knowledge) about the effects of education upon society,
(b) knowledge about society and
(c) an arrangement (or subfund) of sociology;

(2) [sociology of education]$_2$ is

(a) warranted assertions (knowledge about the effects of society upon education,
(b) knowledge about education,
(c) the educology of society and
(d) an arrangement (or subfund) of educology.

The same argument holds for the terms 'psychology of education', 'anthropology of education' and 'economics of education'. Where they are intended to mean warranted assertions (knowledge) about the effects of something upon education, they are better named the

(1) educology of mental processes,
(2) educology of cultural process and
(3) educology of economic systems.

The concept of the term 'educology of' extends to any object of knowlege (i.e., to the phenomena to which warranted assertions refer) which might be an aspect of the field of educational phenomena. For example, all of the following are conceivable:

(1) educology of adults
(2) educology of children
(3) educology of classroom behaviour
(4) educology of classroom discourse
(5) educology of counseling
(6) educology of curriculum
(7) educology of peer relations
(8) educology of politics

See Appendix 1, "Categories of Phenomena within the Educational Process for Educological Inquiry," for other possibilities of the educology of some aspect of education.

Some maintain that the terms 'educational psychology' and 'sociology of education' name disciplines.[14] In such claims, it seems to make more sense to regard them as names for arrangements (or funds) of knowledge which are not educology at all, in one sense, and as subfunds of educology, in a second sense. In the second sense, the subfunds imply the use of all three disciplines for asserting knowledge claims about education, i.e., the disciplines for asserting analytic, empirical and normative knowledge claims.

It has often been asserted that education (in the sense of educology) is not a discipline in its own right.[15] Rather, it borrows from other disciplines, such as sociology and psychology. This is not a warranted claim, and indeed, it is not a sensical claim. It is not sensical because the term 'discipline' is being made to malfunction (i.e., function ambiguously). In this claim, the term 'discipline' is being made to function in the sense of 'arrangements of warranted assertions'. The term 'discipline' can also be used to mean 'rules, logical operations and procedures for warranting assertions'. To dispel confusion created from the ambiguity of the term 'discipline', it is better to let the first meaning be named 'funds of knowledge' and the second, 'disciplines'. The use of these conventions warrants the assertion that sociology and psychology are not, themselves, disciplines. Rather, they are funds of knowledge. Disciplined inquiry is required to develop and form the funds, but the discipline used in the inquiry (i.e., the rules, logical oeprations, procedures) is quite distinguishable and distinct from the fund of knowledge which the inquirer or researcher produces as a result of using the discipline. The funds of knowledge which are sociology and psychology require the use of the same discipline for judging the truth value of knowledge claims as educology, i.e., the disciplines for empirical, normative and analytic assertions. An empirical knowledge claim remains empirical, regardless of whether the claim is about society (and thus is an empirical sociological claim), about mental processes (and thus is an empirical psychological claim) or about educational processes (and thus, an empirical educological claim). A distinction among sociology, psychology and educology can be made of course, but the distinction is in relation to the object of knowledge (i.e., the field of phenomena to which the discourse refers), not the discipline required for producing the knowledge. Sociology characterises a different object of knowledge (viz., society) from psychology (psychology characterises mind), and both characterise different objects of knowledge from educology. Yet all three require the use of the same disciplines, viz., the disciplines requisite for making empirical, normative and analytic knowledge claims. Metaphorical discourse about borrowing obfuscates the relationship of the three funds of knowledge and the disciplines requisite for producing those funds.

Educology and Comparative Education

Like educational sociology and educational psychology, comparative education is closely related to educology. The term 'comparative education' is made to function in the literature which uses the term in two common senses. In one sense, the term means the teaching and studying process as that process functions in any and all cultural, ethnic and national settings. In its second sense, comparative education is the fund of recorded knowledge (warranted assertions) about two or more entitities in the teaching and studying process. More precisely, it is the fund of warranted assertions which characterises two or more features of the educational process with respect to those features' similarities and differences. A paradigm case would be a dissertation which compares and contrasts secondary schooling in, say, Brazil, Australia and Japan.

The first sense of comparative education relates so closely to the process of education to the extent that it is virtually identical with education. The educational process includes all teaching and all studying and all guided intentional learning of any content, everywhere, regardless of national and cultural boundaries, and comparative education in the sense of a process of teaching and studying includes the same.

The second sense of comparative education is identical with comparative educology. But then comparative educology is encompassed by educology, for educology includes all warranted assertions about educational phenomena in any and all cultural and national milieux, and warranted assertions require comparison. That is, the discipline which is required for the affirmation of warranted assertions about education includes the logical operation of comparison. Comparison is therefore part and parcel of the discipline required for producing educology. Comparative education in the sense of comparative educology is educology. It is identical with the fund of propositional knowledge about the educational process.

Logic, Techniques and Products of Educological Inquiry

The nature of educology and educological inquiry can be further clarified by considering how the following are related to educology: (1) logic of inquiry, (2) techniques of inquiry, (3) products of inquiry.

The set of principles which is used in the verification of statements (i.e., the warranting of assertions) can be called the logic of an inquiry. At least three principles can be distinguished. There is the principle of necessity reasoning, in which the logic requires that a statement be judged true (i.e., warranted) when it is necessarily implied by a set of premises (i.e., a set of preceding statements). The principle of necessity reasoning is the same as the principle of deduction. There is the principle of evaluating reasoning, in which the logic requires that a statement be judged true when it is necessarily implied by a set of criteria (i.e., standards or rules or both). In addition, those criteria must be consistent with a set of values or norms to which all persons can reasonably adhere if they were in the same set of circumstances. The principle of evaluative reasoning is the same as the principle of evaluation or the principle of normative reasoning. In addition to deduction and evaluation, there is the principle of observation, in which the logic requires that a statement be judged true (i.e., an assertion be affirmed as warranted) if it is consistent with observable evidence (i.e., evidence which can be adduced by extrospection and/or introspection).

Besides the logic of inquiry, there are its techniques. The actual behaviours performed and the procedures followed in adducing evidence to verify a statement (warrant an assertion) can be called the techniques of an inquiry. Examples include conducting surveys, experimentation, drawing analogies, running simulations, locating documents, taking notes, classifying objects, defining terms, clarifying concepts, etc.

In addition to the logic and the techniques of inquiry, there is the product of inquiry. The product of successful inquiry about the educational process is a set of warranted assertions (i.e., statements which are judged to be true) about some aspect of the process of teaching, studying and guided intentional learning. The set can be classified into at least three categories, viz., analytic, normative and empirical knowledge.

These three categories (logic, techniques and products of inquiry) are critical for forming educology because they constitute the discipline requisite for conducting educological research or inquiry, including retro-search, re-search and neo-search. (See Diagram 1.)

KIND OF INQUIRY:	ANALYTIC EDUCOLOGICAL INQUIRY	NORMATIVE EDUCOLOGICAL INQUIRY	EMPIRICAL EDUCOLOGICAL INQUIRY
LOGIC OF INQUIRY:	PRINCIPLE OF DEDUCTION (NECESSITY REASONING)	PRINCIPLE OF EVALUATION (EVALUATIVE REASONING)	PRINCIPLE OF OBSERVATION (EXTROSPECTION AND INTROSPECTION)
PRODUCT OF INQUIRY:	WARRANTED ANALYTIC ASSERTIONS (ANALYTIC EDUCOLOGY)	WARRANTED NORMATIVE ASSERTIONS (NORMATIVE EDUCOLOGY)	WARRANTED EMPIRICAL ASSERTIONS (EMPIRICAL EDUCOLOGY)
TECHNIQUES OF INQUIRY:	CONCEPTUAL ANALYSIS, PROPOSITIONAL ANALYSIS, DEFINITION, EXPLICATION, ILLUSTRATION, MODEL CASE, CONTRARY CASE, BORDERLINE CASE, INVENTED CASE, RELATED CONCEPT, UNRELATED CONCEPT, PRACTICAL CONSEQUENCES, TERM SUBSTITUTIONS, SUBSCRIPTS, INVENTED TERMS, STATISTICAL ANALYSES (ANALYSIS OF VARIANCE, CORRELATION, ETC.)	VALUE CLARIFICATION, VALUE VALIDATION, VALUE VINDICATION, RATIONAL VALUE CHOICE	SURVEY, EXPERIMENTATION, QUASI-EXPERIMENTATION, ANALOGY, UNOBTRUSIVE MEASURES, CASE STUDIES, PARTICIPANT OBSERVATION, SYSTEMATIC OBSERVATION, SIMULATIONS, ETHNOGRAPHIES, NATURALISTIC STUDIES

Diagram 1:

The Discipline Requisite for Producing Educology

Critical Categories for Arranging Educology into Subfunds

Three additional categories are critical for the arrangment of the product of educological research. They are (1) the phenomena about which inquiry is conducted, (2) the purpose of the inquiry and (3) subfunds of educology.

The something which is investigated in the act of research (including retro-search, re-search, neo-search) can be called the phenomena inquired about, or the phenomena of inquiry, or sometimes, the object of knowledge. Phenomena in the educational process can be classified into at least five categories:

(1) existing educational phenomena,
(2) effective educational practices,
(3) effective administrative and governance practices for education,
(4) worthwhile policies, practices and goals for and within education,
(5) implications of educational language (language within education).

The intended outcome of an inquiry can be called its purpose. At least four purposes of inquiry can be distinguished. They are description, explanation, prediction and prescription. Description is a set of statements which elucidates a state of affairs as it exists. Explanation is a set of statements which provides reasons for why a state of affairs is as it is. Prediction is a set of statements which tells how a state of affairs will be. Prescription is a set of statements which tells what, how and when to do something in order to achieve a desired state of affairs.

An arrangement of educological assertions in relation to a nominated set of purposes and a specified set of features within the educational process constitutes a subfund of educology. Major subfunds of educology include scientific educology, praxiological educology, political praxiological educology, normative philosophical educology, analytic philosophical educology, historical educology and jurisprudential educology. Other arrangements, of course, are possible. Examples include the educology of moral judgment, the educology of motivation, the educology of play, the educology of social class and the educology of women. (See Diagram 2 and also Appendix 1 for possible features of the educational process which could be isolated as objects of inquiry for organisation of subfunds of educology.)

Educology and Meta-Educology

In addition to educological inquiry and subfunds of educology, there is meta-educological inquiry and meta-educology. The distinction between language within the educational process (what teachers say to students and vice versa) and language about the educational process (what is said about teacher and student) has already been made. There can be warranted assertions about the educational process, i.e., verified statements about teachers and students. There can also be warranted assertions about what is said about teachers and students, i.e., verified statements about statements about the educational process. Warranted assertions about the educational process are educology. War-

SUBFUND OF EDUCOLOGY	ANALYTIC PHILOSOPHICAL EDUCOLOGY	NORMATIVE PHILOSOPHICAL EDUCOLOGY	HISTORICAL EDUCOLOGY	JURISPRUDENTIAL EDUCOLOGY	SCIENTIFIC EDUCOLOGY	PRAXIOLOGICAL EDUCOLOGY	POLITICAL PRAXIOLOGICAL EDUCOLOGY
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT)	ALL LANGUAGE WITHIN EDUCATION	INTRINSICALLY AND EXTRINSICALLY GOOD AND BAD STATES OF AFFAIRS FOR AND WITHIN EDUCATION	EDUCATION OF PAST TIMES AND AGES	LEGAL LANGUAGE WHICH GUIDES AND REGULATES EDUCATION	EXTANT EDUCATIONAL PHENOMENA	EFFECTIVE EDUCATIONAL PRACTICES	EFFECTIVE ADMINISTRATIVE AND GOVERNANCE FOR EDUCATION
PURPOSE OF INQUIRY	DESCRIPTION EXPLANATION PREDICTION PRESCRIPTION OF LANGUAGE WITHIN EDUCATION	DESCRIPTION EXPLANATION PREDICTION PRESCRIPTION OF INTRINSICALLY AND EXTRINSICALLY GOOD STATES FOR AND WITHIN EDUCATION	DESCRIPTION EXPLANATION OF EDUCATION IN PAST TIMES AND AGES	DESCRIPTION EXPLANATION PRESCRIPTION OF LEGAL LANGUAGE WHICH GUIDES AND REGULATES EDUCATION	DESCRIPTION EXPLANATION PREDICTION OF EDUCATIONAL PHENOMENA	DESCRIPTION EXPLANATION PREDICTION PRESCRIPTION OF EFFECTIVE EDUCATIONAL PRACTICES	DESCRIPTION EXPLANATION PREDICTION PRESCRIPTION OF EFFECTIVE ADMINISTRATIVE AND GOVERNANCE PRACTICES FOR EDUCATION

Diagram 2:

Critical Categories for Arranging Educology into Subfunds of Educology ranted assertions about statements about the educational process are meta-educology. The statement,

> (1) Compulsory schooling is a requirement which all contemporary nations have stipulated in law,

is an example of educology. In contrast, the statement,

> (2) The statement, "Compulsory school is a requirement which all contemporary nations have stipulated in law," requires verification by examining the statutes of every nation,

is an example of meta-educology. It is a warranted assertion about a statement about education. Meta-educological inquiry includes research about the necessary implications of discourse about the educational process. This kind of inquiry requires the use of the principle of deduction (necessity reasoning) as its logic of inquiry. It produces warranted analytic meta-statements as its product of inquiry. Its techniques of inquiry include concept isolation, propositional isolation, concept analysis, propositional analysis, definition (including classificatory, synonymy, equivalent expression), identification of definition functions (including reportive, stipulative, programmatic), explication, model case, contrary case, borderline case, invented case, related concept, unrelated concept, term substitution, subscripts, invented terms, social context technique, results in language technique, practical results technique. (See Christensen and Fisher, 1979, for an explanation of the application of these techniques.) Its phenomena of inquiry (i.e., phenomena about which inquiry is conducted) are all of the discourse about the educational process. Its purpose of inquiry is description and explanation of the implications of all language about the educational process. Meta-educology, of course, does not constitute a subfund of educology. Indeed, educology is its phenomena of inquiry, just as education is the phenomena of inquiry for educology. Educology is the set of phenomena about which meta-educological research inquires. Education is the set of phenomena about which educological research inquires. (See Diagram 3.)

The Responsibilities of Educological Researchers

It is the responsibility of the educological researcher to be expert in both educological inquiry and meta-educological inquiry, for both are required in the task of making warranted assertions about the educational process. It is the educological researcher's responsibility to identify significant problems about the educational process and to solve those problems. It is also the educological researcher's obligation to clarify what kind of problem is being undertaken to solve, i.e., what logic of inquiry the problem requires, what product of inquiry it implies, what techniques of inquiry it indicates, which phenomena of inquiry demand its focus and what purposes of inquiry it serves. To ask and answer these five questions is to undertake meta-educological research. If the educological researcher omits these questions, she or he risks derailment at the very beginning of the inquiry. Much work can be

KIND OF INQUIRY:	ANALYTIC META-EDUCOLOGICAL INQUIRY
LOGIC OF INQUIRY:	PRINCIPLE OF DEDUCTION (NECESSITY REASONING)
PRODUCT OF INQUIRY:	WARRANTED ANALYTIC META-ASSERTIONS (VERIFIED ANALYTIC META-STATEMENTS) (ANALYTIC META-EDUCOLOGY)
TECHNIQUES OF INQUIRY:	CONCEPT ISOLATION, PROPOSITIONAL ISOLATION, DEFINITON (CLASSIFICATORY, EQUIVALENT EXPRESSION, SYNONYMY), DEFINITIONAL FUNCTION (REPORTIVE, STIPULATIVE, PROGRAMMATIC), EXPLICATION, MODEL CASE, CONTRARY CASE, BORDERLINE CASE, INVENTED CASE, RELATED CONCEPT, UNRELATED CONCEPT, TERM SUBSTITUTION, SUBSCRIPTS, INVENTED TERMS, SOCIAL CONTEXT TECHNIQUE, RESULTS IN LANGUAGE TECHNIQUE, PRACTICAL RESULTS TECHNIQUE
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT):	ALL LANGUAGE ABOUT THE EDUCATIONAL PROCESS
PURPOSE OF INQUIRY:	DESCRIPTION AND EXPLANATION OF THE NECESSARY IMPLICATIONS OF DISCOURSE ABOUT THE EDUCATIONAL PROCESS
SUBFUND OF EDUCOLOGY:	NONE (NOT A PART OF EDUCOLOGY): META-EDUCOLOGY IS A FUND OF KNOWLEDGE AT A SECOND LEVEL, ABOVE AND OUTSIDE OF EDUCOLOGY

Diagram 3:

Critical Categories for Forming Analytic Meta-Educology wasted and invalid results perpetrated if an analytic question is mistaken for an empirical one, or an empirical one, for a normative question. Each kind of question necessarily implies its appropriate logic, product, techniques, phenomena and purpose of inquiry. Analytic questions must be treated as analytic questions for the results to be valid, and so it is for normative and empirical questions. This is why educological researchers, in order to do their job properly and correctly, must be able to undertake expert meta-analysis at the second level of discourse. (i.e., at the level of statements about the educational process). (See Diagram 4.)

LEVEL 2 DISCOURSE:	META-EDUCOLOGY (VERIFIED STATEMENTS ABOUT STATEMENTS ABOUT THE EDUCATIONAL PROCESS)
LEVEL 1 DISCOURSE:	EDUCOLOGY (VERIFIED STATEMENTS ABOUT THE EDUCATIONAL PROCESS)
LEVEL 0:	EDUCATION (THE PHENOMENA OF TEACHING, STUDYING AND LEARNING UNDER GUIDANCE SOME CONTENT IN SOME SOCIAL AND CULTURAL MILIEU)

Diagram 4:

Education, Educology and Meta-Educology and Corresponding Levels of Discourse

Knowledge about Education vs. Knowing about Education

Knowledge about educaiton is to be contrasted with knowing about education. Knowledge is warranted assertions. Knowing is the realised ability to function adequately. As has been argued, educology is the fund of recorded propositional knowledge about the educational process. It is located in the language of books or any other medium suitable for recording statements (e.g., magnetic tape, microfilm, microfiche, computers). Recorded propositional knowledge about the educational process is related to knowing about the educational process, but it is quite distinct from it, as well.

Knowing about education is the realised ability to function adequately in relation to the educational process. Knowing is located within the function of people. It is their cognitive function in relation to the educational process. People can study the recorded propositions in educology in order to extend their educological knowing. In doing so, they extend their cognitive function in relation to the educational process. Through their study, they might improve their function with respect to their conduct as teachers, students, counselors, curriculum developers, educational administrators, or educological researchers (including retro-searchers, re-searchers and neo-searchers).

Through the study of educology, persons can extend their ability to speak adequately *about* education or to speak adequately *while engaging within* the process of education as a teacher, student, counselor, administrator, or curriculum developer. They might extend their ability to think to themselves, silently, about education, to write soundly about education, or to draw supportable and warranted inferences about education. Studying educology is a means by which one might extend one's ability to recall educational states of affairs, anticipate educational moments, invent educational occasions, or discern educational transactions.

It is our fate that we are all mortal, and our knowing dies with us. But educology does not die. While cognitive function ceases, recorded propositions about education remain. Each person who comes anew to the fund of educology has the opportunity to extend her or his educological knowing. Through successful research (retro-search, re-search, neo-search), one might even contribute to the revision and extension of the fund of warranted assertions which constitutes educology.

The Range of Educological Knowing

Educological knowing may be of at least three kinds, and each of the kinds may be manifested in at least five forms and at three levels. The three kinds are qualitative, quantitative and procedural knowing.[16] The five forms are linguistic, physical, imaginal, emotional and conative. The three levels are preconventional, conventional and postconventional.[17] The three kinds of knowing are distinguishable with respect to the state of affairs in relation to which the knowing is performed. The five forms of knowing are distinguishable with respect to the manner in which the knowing is manifested. The three levels of knowing are distinguishable with respect to the degree of expertise with which the knowing is performed.

The combination of kinds, forms and levels of knowing constitutes a range of knowing. A range of knowing may vary from restricted to extended. It is possible for a person to develop qualitative knowing without procedural or quantitative knowing. It is possible for a person to develop, for example, procedural knowing in a linguistic form, but not in a physical form. (See Diagram 5.)

Qualitative knowing about education is the ability to perform adequately in relation to unique states of affairs within education. A teacher recognises, is acquainted with and appreciates Michael's moods, motivations, aspirations and capabilities, not as an adolescent or a middle class child or a student in his 9th year of school, but as Michael, in all of his uniqueness. This is an example of a teacher's qualitative knowing. The teacher might be able to manifest this qualitative knowing of Michael in talking with Michael (linguistic knowing), in anticipating Michael's behaviour (imaginal knowing), in making gestures to Michael (physical knowing), in having a certain set of purposes in mind for Michael (conative knowing). Qualitative knowing of education gives the knower (e.g., teacher, student, counselor, administrator, curriculum developer, researcher) sensitivity for the educational process and for features within the process so that significant and important aspects of the process can be discerned and appreciated by the knower.

Quantitative knowing about education is the ability to perform

LEVELS OF KNOWING		FORMS OF KNOWING	KINDS OF KNOWING		
			QUALITATIVE (A)	QUANTITATIVE (B)	PROCEDURAL (C)
	POSTCONVENTIONAL (3)	LINGUISTIC (a)	A 3 a	B 3 a	C 3 a
		EMOTIONAL (b)	A 3 b	B 3 b	C 3 b
		IMAGINAL (c)	A 3 c	B 3 c	C 3 c
		PHYSICAL (d)	A 3 d	B 3 d	C 3 d
		CONATIVE (e)	A 3 e	B 3 e	C 3 e
	CONVENTIONAL (2)	LINGUISTIC (a)	A 2 a	B 2 a	C 2 a
		EMOTIONAL (b)	A 2 b	B 2 b	C 2 b
		IMAGINAL (c)	A 2 c	B 2 c	C 2 c
		PHYSICAL (d)	A 2 d	B 2 d	C 2 d
		CONATIVE (e)	A 2 e	B 2 e	C 2 e
	PRECONVENTIONAL (1)	LINGUISTIC (a)	A 1 a	B 1 a	C 1 a
		EMOTIONAL (b)	A 1 b	B 1 b	C 1 b
		IMAGINAL (c)	A 1 c	B 1 c	C 1 c
		PHYSICAL (d)	A 1 d	B 1 d	C 1 d
		CONATIVE (e)	A 1 e	B 1 e	C 1 e

Diagram 5:

Range of Knowing as Combinations of Kinds, Forms and Levels of Knowing adequately in relation to states of affairs within education as members of categories. A teacher can, for example, classify Michael's behaviour as typical of 15 year olds. The teacher can categorise Michael's capabilities as characteristic of middle level achievers and relate his aspirations and motivations to what one might expect of male, middle class adolescents. The teacher this manifest theis quantitative knowing in writing a report (linguistic knowing), in having a feeling of complacency towards Michael's behaviour as typical of boys of his age (an emotional knowing), in imagining how Michael will resemble his mates in a year's time (imaginal knowing), in making gestures towards boys of Michael's kind (physical knowing) and in forming purposes for instruction appropriate to Michael as a member of the category of male adolescents (conative knowing). Quantitative knowing gives the knower adequacy and power with respect to theory (i.e., quantitative knowing gives theoretical adequacy). The knower with quantitative knowing about education can describe and explain (i.e., theorise) about the educational process in terms of categories and classifications of features or aspects of the educational process. The knower can do this, if she or he has quantitative knowing, with appropriate evidence and sound inferences.

Procedural knowing is the ability to use a set of procedures to achieve a desired result. A teacher, for example, starts class by having the children line up outside the classroom, enter the classroom in single file and take their seats as assigned seats. The teacher has found that this set of procedures achieves an orderly entry into the room and focuses the attention of the pupils upon what is to happen next in the lesson. In this example, this teacher is manifesting procedural knowing. When the teacher is giving directions, the procedural knowing is being manifested as linguistic procedural knowing. It can also be manifested in gestures (physical knowing), in feelings (emotional knowing), in anticipation (imaginal knowing) and in purposes (conative knowing). Procedural knowing is the basis for effective action within the educational process.

While the examples just given of qualitative, quantitative and procedural knowing were ones in which a teacher manifested the three kinds and five forms of knowing, of course others in the educational process are capable of learning these kinds and forms of knowing about education. These include students, counselors, adminstrators, curriculum specialists and any one interested in knowing about education from a professional viewpoint or from the viewpoint of broadening one's liberal education. (One can develop educological knowing as a liberal study as well as a professional study.)

In addition to kinds of knowing and forms of knowing, we can distinguish levels of knowing. At least three levels of knowing are possible (preconventional, conventional and postconventional), and the three levels relate to the distinctions of beginner, intermediate, expert and expert innovator. One who has preconventional knowing is just at the beginning of learning some kind and form of knowing about education. The person has not yet achieved the conventions. At the conventional level, the person has learned the conventions, and the level includes both intermediate and expert performances. The postconventional level is being manifested when the knower is creating innovations which have not yet become conventions. Innovative expert performers within the educational process and researchers who are engaged in neo-search about the educational process, if successful, are performing at the postconventinal level of knowing. They are setting new standards or conventions of knowing about education.

The Way to Rational Constructive Action in Education

Within matters educational, experience is highly prized. While it is true that experience within the educational process is important for developing educological understanding, it alone is insufficient in and of itself. All of us experience disease, but this does not qualify us as medical practitioners. We occupy space and exist in time, but this experience does not transform us into physicists. So it is with educological knowing.

In order to develop educological understanding, one must engage in experiences with an educological perspective so that the significant and important features of the experience may be discerned and reflected upon. In order to develop a range of knowing about education, one must study educology as well as have experience with the educational process. Rational constructive action within the educational process requires educological understanding. Without that understanding, action can be taken, of course, but not rational action. If such action is constructive, it will be by accident, for it will not be by one's qualitative, quantitative and procedural knowing about education.

The way to rational constructive action within the educational process is through coming to know as much as possible about education. The full range of knowing (its three kinds, five forms and three levels) is indicated for undertaking such action. Such knowing requires appropriate experience within the educational process, and that appropriate experience is made appropriate when it is undertaken with an educological perspective. The development of the educological perspective requires the study of educology, i.e., the reading and the comprehension, the reflection upon and the intelligent action in relation to warranted assertions about the educational process. It is educology which provides theory about education and cognitive structure for reasoning about education and for taking rational constructive action in and for education.

Footnotes

1. See M.S. Knowles, *The Modern Practice of Adult Education: Andragogy versus Pedagogy*, New York: Association Press, 1970 and K.P. Cross, *Adults as Learners*, San Francisco: Jossey-Bass, 1981, for the argument that 'andragogy' is an appropriate name for knowledge about adult education. See J.S. Mill, *A System of Logic*, New York, 1846, Book VI, Chapter III, Paragraph 4, for the argument for 'ethology'. See E. Stones, *Psychopedagogy: Psychological Theory and the Practice of Teaching*, London: Methuen & Co., 1979, for the argument for the use of the term, 'psychopedagogy'.

2. The argument for the term 'educology' as an appropriate name for knowledge about education was originally developed by Elizabeth Steiner Maccia in "Logic of Education and Educatology: Dimensions of Philosophy of Education," *Proceedings of the Twentieth Annual Conference of the Philosophy of Education Society*, 1964. The history of educology is recounted in J.E. Christensen (ed.), *Perspectives on Education as Educology*, Washington, D.C.: University Press of America, 1981, and in J.E. Christensen and J.E. Fisher, *Organization and Colleges of Education: An Educological Perspective*, Sydney: Educology Research Associates, 1983.

3. The argument for educology over pedagogy is cogently stated in Elizabeth Steiner [Maccia], *Educology of the Free*, New York: Philosophical Library, 1981, and it is iterated in J.E. Christensen, *Curriculum, Education, and Educology*, Sydney: Educology Research Associates, 1981.

4. A more detailed argument for educology over andragogy can be found in J.E. Christensen, *Curriculum, Education, and Educology*, 1981.

5. See Elizabeth Steiner [Maccia], *Educology of the Free*, 1981, pp. 50-51, for the full argument for educology over ethology.

6. See E. Stones, op. cit., for an elaboration of the concept of psychopedagogy.

7. These distinctions of retro-search, re-search and neo-search are made by Elizabeth Steiner [Maccia] in "Educology: Thirteen Years Later," in J.E. Christensen (ed.), *Perspectives on Education as Educology*, 1981.

8. See, for example, Paul Taylor's *Normative Discourse*, Westport, Conn.: Greenwood Press, 1961, for an elaboration of the logic of normative inquiry and evaluative reasoning.

9. Elizabeth Steiner [Maccia] made the distinction of praxiology of education in Elizabeth Steiner Maccia, "The Non-Identity of Philosophy and Theory of Education," in John Martin Rich (ed.), *Readings in Philosophy of Education*, second edition, Belmont, California: Wadsworth Publishing Co., 1972. For other discussions of praxiology, see Tadeusz Kotarbinski, *Praxiology; An Introduction to the Sciences of Efficient Action*, translated from the Polish by Olgierd Wojtasiewicz, London: Pergamon Press, 1965. Also, see James F. Perry, "Praxiology of Education as a Branch of Educology," in J.E. Christensen (ed.), *Perspectives on Education as Educology*, 1981.

10. See, for example, J. Dewey, *Democracy and Education*, 1916; E. Bayles, *Pragmatism in Education*, New York: Harper and Row, 1966; and J. Butler, *Idealism in Education*. New York: Harper and Row, 1966.

11. See G. Ryle, *The Concept of Mind*, New York: Barnes and Noble, 1949; I. Scheffler, *The Language of Education*, Springfield, Illinois: Charles C. Thomas, 1960; B.O. Smith and R.H. Ennis, *Language and Concepts in Education*, Chicago: Rand McNally and Co., 1961; J. Gribble, *Introduction to Philosophy of Education*, Boston: Allyn and Bacon, 1969.

12. The use of the term 'philosophy of educology' originated with the work of Elizabeth Steiner [Maccia]. See her chapter, "The Non-Identity of Philosophy and Theory of Education," in John Martin Rich (ed.), op. cit. Her conception of philosophy of educology is followed in this discourse, however she did not distinguish between analytic and normative philosophy of educology, as is done here.

13. Elizabeth Steiner coined the term 'meta-educology' in "The Non-Identity of Philosophy and Theory of Education," op. cit. Her usage of the term is followed in this discourse.

14. See, for example, Jeane Pietig, "Is Foundations of Education a Discipline?" in *Educational Studies*, Vol. 6, No. 1/2 (1975), pp. 1-2.

15. See, for example, "Report of the Task Force on Academic Standards: Guidelines for Professional Academic Instruction in Foundations of Education, Educational Studies and Educational Policy Studies, in the *American Educational Studies Association Newsletter*, Vol. 3, No. 3 (1977), pp. 2-6.

16. These categories of qualitative, quantitative and procedural knowing are derivative of George S. Maccia's categories of qualitative, quantitative and performative knowing which he developed in a series of papers (1973a, b, c; 1977).

17. The concepts of forms of knowing and levels of knowing are treated in more detail in "Cognition, Knowing, and Understanding: Levels, Forms, and Range," *Proceedings of the National Conference of the Australian Association for Research in Education*, November 23-27, 1983, Canberra: AARE, 1983.

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Appendix 1: Categories of Phenomena within the Educational Process for Educological Inquiry

		THE EDUCATIONAL PROCESS									
		THE OFFICIAL EDUCATIONAL PROCESS				THE UNOFFICIAL EDUCATIONAL PROCESS					
		LEVELS OF THE EDUCATIONAL PROCESS				LEVELS OF THE EDUCATIONAL PROCESS					
		(A) EARLY CHILDHOOD	(B) PRIMARY	(C) SECONDARY	(D) ADULT, FURTHER, TERTIARY	(E) EARLY CHILDHOOD	(F) MIDDLE CHILDHOOD	(G) ADOLESCENCE	(H) EARLY ADULTHOOD	(I) MIDDLE ADULTHOOD	(J) SENESCENCE
BASIC COMPONENTS OF EDUCATION	TEACHER (1)										
	STUDENT (2)										
	CONTENT (3)										
	MILIEU (4)										
DERIVATIVE COMPONENTS OF EDUCATION	INTENTIONS (5)										
	METHODS (6)										
	STYLES (7)										
	RESOURCES (8)										
	LANGUAGE (9)										
	CURRICULUM (10)										
BASIC PROCESSES IN EDUCATION	TEACHING (11)										
	STUDYING (12)										
	LEARNING (13)										
PROCESSES CLOSELY RELATED TO EDUCATION	DEVELOPMENT (14)										
	SOCIALIZATION (15)										
	ENCULTURATION (16)										
	COUNSELING (17)										

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AN EDUCOLOGICAL EXAMINATION OF CURRICULUM MODELS AND RELATED VARIABLES

Laurie Brady
Kuring-gai College of Advanced Education
Lindfield, NSW

Introduction

Goodlad (1979) referred to the "substantive" elements of "curriculum commonplaces" as basic to any conceptual system for the development of curriculum. These commonplaces, also known as the "curriculum elements," are "objectives," "content," "method" and "evaluation."

Although studies have examined the curriculum planning decisions of teachers, they have tended to concentrate on the importance given by teachers to particular curriculum elements, rather than to study the elements as they relate conceptually in a model. For example, Zahorik (1975) examined 194 teachers' use of the curriculum elements in the U.S.A., but reported the findings in terms of quantity of use of each, and how often it was the first planning decision. Toomey (1977), with the declared aim of achieving a "detailed unravelling" of the teachers' views on the curriculum elements, compared two groups of Australian teachers planning a social science unit: one which started by stating objectives, and another which used principles for the selection of content not dependent upon prior objectives.

The lack of an instrument which examines the curriculum elements as they are used in a model prompted the author to develop such an instrument.

What follows is a report on the development of this instrument and of a major study which examined how teachers use the models of curriculum development. Relationships between the data gathered in this major study in the early eighties were further investigated over a number of years to add to an understanding of planning by using curriculum models at the school level. These investigations, which examined the relationship between models and methods of decision making, the relationship between models and organizational climate and the differential perceptions of school staff in relation to models, are also reported.

Models and Instrument Development

The theoretical literature reports on several models which display the relationship between the curriculum elements in the context of curriculum planning. These include Tyler's (1949) "objectives" or "means-end" model, the cyclic models of Wheeler (1976) and Nicholls (1978), the process model of Hawes (1979) and the interaction model (Taba, 1962; Cohen, 1974).

Two models were selected after an analysis which concluded that the two represent and subsume the major approaches to developing curriculum. There were the objectives model and the interaction model.

The objectives model of curriculum development involves the developer starting with statements of objectives, planning content which is consistent with realising the objectives, planning appropriate teaching and learning activities and planning for evaluation, in that order.

The interaction model of curriculum development involves the developer starting at any point, moving in any sequence among the curriculum elements and allowing the learning situation to determine the method of development. The curriculum elements are regarded as interactive and progressively modifiable.

Items were written to relate to the characteristics of the two specified models. The instrument, named the "Curriculum Model Questionnaire" (CMQ), originally contained 18 items which were answered by using the reponse options of "always," "often," "sometimes," "rarely" or "never." It was refined over a period of five months by consulting with teachers concerning the appropriateness of language and concepts and by consulting with curriculum experts from a university and a college of advanced education concerning the construct validity.

In determining the construct validity, a zero per cent tolerance on all items was required. Thus every item scored as "always" or "often" for one model by all curriculum experts had to be scored as "rarely" or "never" for the other model by the experts. The option "sometimes" was permitted for the interaction model only.

The CMQ was refined in a pilot study and a major study which involved the development of curricula in mathematics and social studies. These two subjects were selected in the expectation that they would involve different approaches to curriculum planning. The pilot study sample comprised 50 primary and infants teachers (from kindergarten through the sixth year of schooling) in the Sydney metropolitan area. Two factors were extracted from the factor analysis for mathematics and social studies. These two accounted for 71.7 per cent and 70.4 per cent respectively of the total variance. One factor related to the objectives model, and the other, to the interaction model. The elimination of certain items produced reliability coefficients for the four scales (objectives and interaction models for mathematics and social studies) between 0.72 and 0.82.

The major study involved 277 teachers from 20 schools in a stratified proportional systematically selected sample of public schools in the Sydney metropolitan area. The construct validity of the scales was tested by two statistical procedures:

(a) Joreskog and Sorbom's (1978a) *Efap II Exploratory Factor Analysis Program* in which the items measuring the models were analysed as one, two, three, four and five factors; examination of the factor loadings revealed that the two factor solution (objectives model and interaction model) was the most appropriate.

(b) Joreskog and Sorbom's (1978b) *Lisrel IV Program* in which the various parameters in the different matrices were constrained to test alternative models and an overall test of "goodness of fit" for each proposed model was obtained.

The final standardised solutions for each model for mathematics and social studies are displayed in Table 1. These reported solutions, also published in Brady (1982 and 1986), demonstrate the feasibility of developing an instrument to measure teacher use of the models.

Models and Their Use in Schools

(a) School Scores. In the major study previously mentioned, means for the objectives and interaction models were calculated for each of the 20 schools in the sample. It was found that scores for the objectives model and interaction model were *not* very different. A *prima facie* explanation is that respondents within each school, whether as groups or as individuals, used a different model, and that scores for each averaged out across the school staff. The other explanation is that individual respondents did not have largely discrepant scores, even though the models were different conceptually. A second finding was that for 10 of the 20 schools, the score for the objectives model was higher than the score for the interaction model, and a third finding relates to differences between mathematics and social studies. Interaction model scores were higher for social studies than mathematics in 17 of the 20 schools. This latter finding may well be a reflection of the differences between the two sets of curriculum documents issued by the N.S.W. Department of Education. Social studies is a relatively open-ended guide which stresses the nature of teaching and learning activities. It may therefore seem to teachers to be more amenable to an interaction model.

(b) Individual Scores. To ascertain whether a high score on one model, for an individual, was associated with a low score on the other model, a program called *Scattergram* (Nie et al., 1975) was used. The correlation coefficient for mathematics was 0.15, and for social studies was 0.14, indicating that there was little or no relationship between the scores on the two models. This fact suggests that respondents used the two models eclectically. However, a contributing explanation for this finding may involve the use of the response options of "always," "often," "sometimes," "rarely" and "never," which were adopted in the expectation that they would better reflect the reality of curriculum development than a dichotomous response format. Some items which could be scored "always" for one model could be scored "sometimes" for the other model. Thus the likelihood of a high score for one model, and a correspondingly low score for the other, is diminished.

Models and Staff Perceptions

Several studies have examined the effect of status on perception of organisational climate in schools (Marcum, 1968; Grassie and Carss, 1972; Finlayson, 1973; Ogilvie, 1975), and teaching experience

Table 1: Factor Loadings (standardised solution) CMQ

MATHEMATICS	OBJECTIVES MODEL	INTERACTION MODEL
1. Follows this order: objectives, content, method, evaluation	*0.76	0.00
2. Allows for changes in the order of planning once underway	0.25	*0.37
3. Starts with a different curriculum element at different times	0.00	*0.63
4. Regards stating objectives as the most important step	*0.78	0.00
5. Considers that the order of curriculum elements to follw varies	0.00	*0.74
6. Begins with any one of the four curriculum elements	0.19	*0.70
7. Starts with stating objectives	*0.88	0.00
8. Regards initial objectives as the bases for selecting content and method	*0.86	0.00
9. Allows for objectives to be stated after method is determined	0.20	*0.38
10. Considers that the learning situation determines the order of curriculum elements	0.07	*0.52
11. Regards evaluation as the extent to which the initially stated objectives are achieved	*0.41	0.08
SOCIAL STUDIES		
1. Starts with a different curriculum element at different times	0.00	*0.71
2. Regards stating objectives as the most important step	*0.71	0.00
3. Considers that the order of curriculum elements to follow varies	0.00	*0.77
4. Begins with any one of the four curriculum elements	0.00	*0.54
5. Starts with stating objectives	*0.92	0.00
6. Regards initial objectives as the bases for selecting content and method	*0.78	0.06
7. Considers that the learning situation determines the order of curriculum elements	0.19	*0.43

N.B. The "*" indicates the item and scale for which the higher loading was expected.

has also been cited as an indicator of differential perceptions and attitudes relating to schooling (Finlayson, 1973; Kensell, 1978). As data on the attributes of respondents had been collected, it was decided to determine whether perceptions of models used in curriculum planning were influenced by these attributes.

The data were analysed by using a multivariate regression analysis developed by Finn (1978). This procedure tests whether certain predictor variables are significantly related to the criterion variables. In this case the predictor variables were school department (primary -- years 3 through 6 -- or infants -- kindergarten through year 2), status of the respondent within the school, teaching experience, age and sex. The criterion variables were the models for both subjects. It was found that the higher the respondent's status, the more likely she or he was to perceive an objectives model in curriculum planning ($p < 0.05$).

A number of explanations are suggested. First, staff in positions of authority or higher status are more likely to be involved in taking curriculum initiatives, and are therefore more likely to have consulted texts in curriculum development. Most texts have tended to provide a planning by objectives framework. In fact, the "planning by objectives" movement (Logan, 1974; Nebauer, 1975; Sutton, 1978) was a strong force in N.S.W. public schools in the late seventies.

Second, an objectives model may be seen to be the quickest way to produce a curriculum. Its fixed sequence may be seen to eliminate the time consuming process associated with more flexible models. A third and more contentious explanation is the possibility of a general flexibility factor. Does the nature of a higher status position make its incumbent less flexible in an area broader than curriculum development.?

Models and Methods

As data had been collected in relation to methods of curriculum decision making in the major study, it was more recently decided to examine the relationship between curriculum models and methods. No other research in the area had been conducted, so any prediction was speculative. Numerous classifications of methods had been considered from the research literature (Maddocks, 1973; Southworth, 1975; Knoop and O'Reilly, 1976; Harrison, 1979; Seddon, 1979).

Table 2 displays these methods of decision making. The categories are related across authors and represent an interpretation by the author of the degree of decision making involvement, from minimum to maximum involvement, in descending order. This table was first published in Brady (1984).

An examination of Table 2 suggests several common categories. One is the involvement of staff in shared decision making. A second common category involves decisions which are made for the teacher. A third common category finds its expression in decision making by the class teacher. Although only Seddon (1979) used the category of "individual in parameters," it was selected for the study because it

Table 2: Methods of Decision Making - Overview of the Literature

SOUTHWORTH	MADDOCKS	KNOOP & O'REILLY	SEDDON	HARRISON
Egocentric		Principal Departmental Head Individual	Static Individual	Unilateral Direction/ Request
	Democratic Centralist	Democratic Centralist Group Discussion	Co-ordinator Development	
			Individual within Parameters	
				Handclasp/ Handshake Subgroup
Collegial	Parliamentarian	Group Decision Binding when Majority Agrees		In Consultation/ Acquiescence Voting with Majority Decision Silent, Assumed Consensus
	Participant Determining	Group Makes Decision Consensus Required	Group Planning (Consensus)	Consensus Voting with Unanimous Decision
			Miscellaneous	Unknown

seemed to be a method which might be used more often with the greater involvement of school staff in curriculum decision making. The four categories selected were:

- principal - the principal makes the decisions;
- class teacher - the class teacher acting alone makes the decisions;
- group - a group of staff makes the decisions;
- individual in parameters - individual teachers working within limits defined by the executive staff, make the decisions.

An instrument developed to examine decision making methods according to these categories was used in the major study. Curriculum decision making subject matter was selected from categories used in the Curriculum Action Project (Cohen and Harrison, 1978). Each item comprised a particular curriculum area (including content, teaching methods, learning activities, grouping, objectives, content sequencing, classroom space, assessment and curriculum evaluation), a listing of the four methods defined and the response options of "always," "often," "rarely" or never."

The construct validity of the scales was confirmed by factor analysis in a pilot study and the *X Scale* program (Bailey, 1976), which measured both the reliability of each scale within the test, and the correlation of items with those scales. An inter-item correlation of 0.4 was adopted as the acceptable criterion, and the reliability of the scales ranged form 0.87 ot 0.97.

The relationship between methods and models was measured by using a multiple regression analysis. Only two of the predictor variables were significant, and both in relation to the use of the interaction model in developing mathematics. The analysis revealed that:

- the more an interaction model was used in mathematics, the more likely it was that class teacher decision making operated ($p < 0.01$);
- the more an interaction model was used in mathematics, the more likely it was that group decision making operated ($p < 0.05$).

The apparent contradiction between these two results can be explained. The relationship between group decision making and the interaction model might be predicted, as a fixed and linear sequence among the curriculum elements is less likely to be adopted as the number of developers involved increases. The greater the number of participants, the greater the likelihood of differences in preference for a model. However, it is not inconsistent that individual teachers may also prefer an interaction model. They may plan in a less systematic way, free from the limitations imposed by other staff, and this lack of method may be reflected in the use of an interaction model.

The only significant results relate to mathematics and *not* to social studies. The possible explanation is that the interaction model may be used appreciably more when developing social studies curriculum, irrespective of the method used. This would decrease the likelihood of obtaining a significant relationship of the model with any *one* method.

Models and Organisational Climate

While organisational climate has been related in general to educational innovation, it has also been cited as a factor which should facilitate curriculum development in schools (Logan, 1974; Nebauer, 1975; Kemp, 1977; Brewer, 1978; Smith, 1978; Walton, 1978; Seddon, 1979). It was therefore decided to investigate the relationship between organisational climate and one aspect of school based curriculum development, namely, the model used in curriculum development.

To measure organisational climate, an adaptation of the O.C.D.Q. for Australian primary schools, developed by Thomas and Slater (1972) was used. Thomas and Slater found a four factor solution. Abbreviated definitions of these factors follow:

Principal · supportiveness - a measure of the principal's involvement in the school and of the principal's concern with the professional and personal welfare of staff;

· operations emphasis - a measure of the principal's concern with the operative aspects of the school and the principal's close and sometimes burdensome supervision;

Teacher · intimacy - a measure of social cohesion among staff;

· disaffiliation - a measure of the lack of cohesive professional relationships among staff.

Factor analysis of data from the major study discovered that the factor structure was very similar to that of Thomas and Slater, with 70 per cent of items being identical. This marked agreement, associated with the difficulties of redefining the factors, prompted the adoption of the Thomas and Slater four factor solution, but with slightly fewer items.

To determine the relationship between the organisational climate factors and models, Finn's (1978) multivariate regression analysis was applied.

Of the predictor variables, three organisational climate factors were found to be significant at the 0.05 level. Examiration of the regression equations indicated that:

- the more supportive the principal, the more likely staff were to perceive use of the interaction model;
- the greater the operations emphasis of the principal, the less likely staff were to perceive use of the interaction model;
- the greater the intimacy among staff, the more likely staff were to perceive use of the interaction model.

The relationship between perceived principal supportiveness and the interaction model might be explained by the fact that the interaction model is more flexible than the objectives model. Staff may feel more encouraged to use the interaction model when the principal is supportive. This explanation has further credence in view of the finding that the interaction model was less likely to be used when the principal was highly motivated toward task achievement (operations emphasis). If the principal is high on operations emphasis, staff may feel that they do not have the time to develop a curriculum which is more flexible and developed less sequentially.

The relationship between intimacy and likelihood of perceiving use of an interaction model is consistent with the characteristics of an interaction model. A model which is flexible, allows for constant interaction of the elements and is possibly the result of more staff interaction might be used more in a school enjoying a high measure of social cohesion.

Conclusion

Goodlad (1966:141) argued that "nowhere in education is there greater need for conceptual systems to guide theory building, research and planning, than in the field of curriculum." The development of the CMQ contributes to meeting this need in demonstrating the feasibility of designing instruments based on curriculum models and the curriculum commonplaces to study the process of curriculum development in a more dynamic way.

However, the CMQ is not a definitive instrument. The finding that staff draw from both the objectives model and interaction model in an eclectic way when planning curriculum indicates that no single curriculum model is used. The development of further instruments will shed more light on the process of curriculum development and provide valuable information for developers and administrators.

Examination of other variables provides further information about the use of curriculum models. For example, the emergence of the status of school staff as a variable which explains differences in perception of curriculum models underscores the need for a further inquiry. There is a need for examination of status as a variable which explains differences in perception of any aspect of curriculum development. The demonstrated relationship between models and methods further illuminates the process of curriculum planning in schools, but this finding should be tempered by the fact that a significant relationship was not present for both school subjects. Finally, the strength of the relationship between organisational climate and curriculum models was surprising, and it further underlines the importance of organisational climate as a factor in the facilitation of curriculum development in schools.

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EDUCOLOGY IN THE INFORMATION SOCIETY: THE TEACHER-LIBRARIAN'S CONTRIBUTION

Joyce Kirk
Library Services
N.S.W. Department of Education

The Information Society

Many writers and commentators remind us that the information society has arrived. Known variously as the post-industrial society, the information revolution, the knowledge explosion, the IT age, the electronic age or the telecommunications era, the present times are being shaped by the advances resulting from the convergence of technologies in computing and telecommunications. The computer serves in fact both as an information machine able to store and process information, and with appropriate hardware and software, as a communication device. Evidence of the convergence is apparent in everyday living in the forms of the electronic transfer of funds through streetside automatic tellers, cashless transactions made in stores and petrol stations, reservation of airline tickets from home through VIATEL, access to massive information databases both in Australia and overseas, Medicare cards for the payment of some health services, developments in scans and x-rays as diagnostic tools in medicine, bar codes on goods in supermarkets to register prices and control stock, manufacture of motor cars by robots, the processing of form letters, and sophisticated temperature and humidity controls in public buildings.

Daniel Bell, the eminent Harvard sociologist, is one of the leading writers on the post-industrial society. As early as 1956, he demonstrated that the number of white collar workers (professional, managerial, office and sales personnel) outnumbered the blue collar workers (craftsmen, semi-skilled operatives and labourers) in the occupational ranks of the American class structure. He described the growth in professional and technical employment as startling and used it to illustrate a change in knowledge itself.

The empirical knowledge of industrial society gives way in the post-industrial society, according to Bell, to theoretical knowledge based on the

> codification of knowledge into abstract systems of symbols that can be translated into many and varied circumstances (Bell, 1967: 101)

as exemplified in econometrics, systems analysis, game and decision theory, cybernetics and information theory. This theoretical knowledge, coupled with an orientation to the future, provides potential for planning and forecasting. The reality, however, may be quite different.

Although Bell has had a significant impact on the thinking of librarians and others engaged in the acquisition, storage and dissemination of information, his views have not gone unchallenged by the library profession. Blake (1978) compares the information society to a fairytale and points to the variety of social groups, including illiterates, in the community. She argues that these groups are overlooked in Bell's analysis, and she claims that

> all people need information, but the kinds of information most people need is different in form and content from that required and made available by the educated elite. (Blake, 1978:89-90)

The establishment of community information centres in Australia strengthens Blake's central thesis. These centres meet a need for their clients' information for everyday living.

In a recent issue of *Australian Library Journal*, the official publication of the Library Association of Australia, which incidentally is planning to change its name to one thought to be more representative of information specialists, Hans Lofgren (1985) presents a critique of the post-industralists. He warns that the quality of the information society is not necessarily different to what has preceded it. In other words, although more and more information is being generated, and one estimate is that by the year 2032 scientific papers will outweight the earth itself (de Sola Price, 1963), there is no evidence of the anticipated effects of better decision making, a better quality of life or a more humane society.

Bell and the post-industrialists have had their critics from other quarters. In an address to the Library Association's Biennial Conference in 1984, Professor Stephen Hill, Director of the Centre for Technology and Social Change at the University of Wollongong, argued that the

> values and social arrangements of production in post-industrial society are not new but represent a point further down the continuum of bondage to instrumental technique that the society entered two hundred years ago. (Hill, 1984:4)

The information-rich and the information-poor are members of a two class system within the information ecosystem where technique maintains pride of place ahead of the quality of interpersonal relations.

Australia: An Information Society

Using the shift in employment from manufacturing to services as a benchmark, Australia seems to be on the way to joining the post-industrial society. In an analysis of the Australian labour force of 1981, Lamberton (1984) suggested that the information sector comprised forty-one per cent of the work force. Included in this sector were researchers, information gatherers, scientific and technical consultants, administrative and management personnel, clerical staff, educators, librarians, communications and media workers, telephonists, machine operators and technicians. Lamberton also demonstrated an increase in the percentage of the Gross Domestic Product of the primary information sector in the period 1968-69 and 1977-78. It will be interesting to see what further information about the composition of the Australian workforce can be gleaned from the June 1986 census.

One of the more challenging aspects for education arising from the impact of technology in Australia has been highlighted in the *Report of the Committee of Enquiry on Technological Change in Australia* (1980). It suggested that new technology will effectively increase the number and range of intellectual tasks while at the same time decrease the number of skilled tasks. (Committee of Enquiry, Vol. 1, 1980, 7.15) This trend is in line with Bell's identification of the centrality of theoretical knowledge, and it is one of the basic reasons for structural unemployment. One example from a submission to the Committee of Enquiry illustrates the impact of technology on employment. The Australian Mutual Provident Society employed 4042 people in 1974 and 3387 in 1979, a fall of 655 over a fiveyear period. The fall can be broken down further: thirty-six per cent of those employed at Grade 1 level or clerical and administrative employees, thirty-two per cent of those employed at Grade 2 level and ten per cent of those employed at Grade 4 level or first line supervisors (Committee of Enquiry 1980, Submission Reference 231).

The *Report* demonstrated that technological change has no one single effect on employment. It can render some jobs unnecessary; it can alter the skills required for some jobs; and it can create completely new jobs. The *Report* considered that of all activities, information processing, storage and dissemination are probably the most vulnerable to the impact of the technologies of the microprocessor and microcomputer. The advent of the paperless or electronic office is a case in point. It demands the restructuring of office staff as the need for typists is reduced in favour of keyboard operators, and clerical functions are changed because of the storage of information in data banks. New skills are required for keyboard operation, computer program development and the maintenance and servicing of equipment.

These shifts in employment are of course important in terms of the social and economic context within which schooling takes place, especially as students' perceptions and expectations of the world in which they live are formed and refined. Choices in subject study are often made by students in senior high school on the basis of the careers they intend to pursue.

Information Literacy

One writer whose ideas reflect a developmental view of technological and social change is Eugene Garfield. He argues that progress to a fully fledged information society is preceded by a phase of information consciousness, where

> people realize the importance of rapid access to information . . . but do not necessarily have the information they need. (Garfield, 1979:88)

It is rapid delivery of needed information which is the distinctive characteristic of the information itself.

A precondition of the information society is information literacy, defined by the Information Industry Association in the United

States as knowledge of

> the techniques and skills for using information tools in molding solutions to problems. (Garfield, 1979:210)

A somewhat broader definition has been developed by Tessmer:

> the ability to effectively [sic] access and evaluate information for a given need. (Tessmer, cited in Breivik, 1986:10)

For Tessmer, the characteristics of information literacy are

> .an integrated set of skills and knowledge . . .
> .developed through acquisition of attitudes . . .
> .time and labour intensive
> .need-driven . . .
> .distinct but relevant to literacy and computer literacy
> (Tessmer, cited in Breivik, 1986:10)

Information literacy is a challenge to educators and to education authorities in Australia where the Adult Liberacy Council (cited in Jones, 1983:13) has estimated an adult illiteracy rate of ten per cent. In New South Wales, one study of young people suggested that seventeen per cent of fifteen year olds are sub-literate or illiterate and that a further thirty-two per cent of fifteen year olds are semi-literate (cited in Jones, 1983:13).

Young people are becoming increasingly computer literate as a result of the national Computer Education Program which seeks to

> provide students with the resources to learn about and to use computers and computing. (National Advisory Committee on Computers in Schools, 1984:18)

The New South Wales Department of Education's *Computer Awareness Course, Years 7-10* (1984) is one example of a broadly based program. It aims to

> develop in students those understandings which give them a greater measure of control over their lives in relation to their changing environment, individually and collectively, now and in the future. The computer is used as one significant example of wider technological change. (New South Wales Department of Education, 1984:3)

The minimum goals for computer awareness go beyond the technology of computers. They state that

> .Every student should have an awareness of the implications of computers for the individual and society
> .Every student should experience and be able to assess the use of a computer as a tool for investigation and discovery
> .Every student should have an understanding of the wide range of areas in which a computer may be used
> .Every student should have practical experience in using appropriate computer programs in simple, well structured problem-solving situations

> Every student should be made aware of the way in which a computer is instructed to carry out a task (New South Wales Department of Education, 1984:3)

Education for the Information Society in Australia

One educational agenda for the new order is summarised in *Education in Western Australia* (1984), also known as the Beazley Report (1984). While it acknowledges the growing importance of technology and argues that students need to understand and use computers from their early years at school it establishes life-skills as a major focus of schooling designed to meet the immediate and future needs of students. It places

> increased emphasis on skills for locating, analysing, interpreting and applying knowledge and on investigative and evaluative skills. (Committee of Inquiry, 1984:2.19)

The life-skills identified include personal skills, social skills, intellectual skills, knowledge acquisition skills, environmental skills, mathematical skills, creative skills, general living skills and computer management skills.

The Western Australian response to information technology is appropriate to the information society for several reasons. Firstly, the use of technology is subsumed in life-skills, and it does not become an end in itself. Secondly, it does not view student use of technology only as a preparation for work. Thirdly, technology takes its rightful place alongside other teaching and learning materials, with the result that computer education becomes a whole-school responsibility integrated into the curriculum. Fourthly, the emphasis on life-skills should enhance information literacy. Finally, but perhaps most importantly in the light of recent initiatives toward equity and participation in education, the selection of life-skills which are basic to a school's education program changes according to student needs.

Another agenda is suggested by McShane and Dyson, both computer education consultants in Tasmania. They propose two goals:

> to provide tomorrow's adults with a knowledge of computers which will enable them to function effectively in an Information Society . . . to provide them with computer-based learning opportunities which will not only improve their learning but also help with the students confidence in using computers. (McShane and Dyson, 1984:99)

The development of information literacy, albeit in terms of automated information storage and transfer systems, is implied in both goals. Students need to know where information is stored and how to retrieve it. It is crucial that educators are not blinded by the flash of electronic gadgetry and lose their concern for students as people. There is a mandate in the living skills approach for educating the whole person, and it is imperative that students' learning programs accommodate information technology in the same way as they embraced audiovisual technology some twenty years ago. The aims of education as expressed by the New South Wales Department of Education in in 1973 and 1977 are still sound in 1986.

> The central aim of education, which with home and community groups the schools pursues, is to guide individual development in the context of society through recognisable stages of development toward perceptive understanding, mature judgement, responsible self-direction and moral autonomy. (New South Wales Department of Education, 1973:14-15)

This student-centred statement makes few assumptions about the future of society, and in this respect it has a basic commonality with the living-skills approach.

Libraries too have a broad educational purpose and Hill forcefully affirms their potential as "health giving agents in an age when encroaching anonymity and meaninglessness are very real dangers." He argues that each library can be "a home for the human spirit, rather than a steely-eyed reflector to silicon-chip morality." (Hill, 1984:12) The future should be worthwhile, and education has a vital role in assuring that it is so.

Resource Based Learning

One of the approaches to learning which ensures the development of the potential of individual students is resource-based learning. The underlying assumption for such learning is that

> the student will learn from his own direct confrontation, individually or in a group, with a learning resource or set of resources, and activities connected to them, rather than by conventional exposition by the teacher. (Beswick, 1977:ix)

Resource-based learning is essential to the development of students as independent and autonomous learners. It assumes that learners are active participants in their education, and it underlies life-long learning. Success in managing the information explosion at a personal level, meeting the likely need for vocational retraining and understanding the changing patterns of knowledge, are all predicated on independent learning.

The shift in emphasis from the content of what students learn to the processes of learning how to learn emphasises the use of information, and the sources, print, non-print and human in which it is stored. In a resource rich learning environment students can select resources appropriate to their learning styles, abilities and interests. Skills in the location, retrieval and use of information can be developed within the context of the school curriculum.

Information Skills

These are the skills underpinning information literacy and resource-based learning. They are those skills which allow an individual to

. define an information task or problem to be solved, then
. locate
. select

. interpret and
. use information to complete the task or solve the specified problem

Information skills have a broader base than instruction in using the library. Over the past ten or fifteen years there has been a growing awareness among educators that the ability to locate, retrieve, manipulate, synthesise and use information is a key element in all curriculum areas. Information skills, unlike some library skills programs of the past, cannot be taught in isolation from the school's curriculum.

United Kingdom. Most of the research and development projects associated with information skills have taken place in the United Kingdom. They have been an outcome of the resource-based learning movement as well as the demand for information literacy hastened by technological developments. The initiative for most of the projects has come from the British Library, and it has been assisted by various education authorities including the Schools Council, the Council for Educational Technology, universities and higher education institutes. Current activities include the development of whole school information skills policies and program, studies of the role of the school librarian and teachers in information skills programs, and an investigation of the information needs of students (British Library, 1985). These activities have been given a high priority by the British Library's Research and Development Department which has also assumed a responsibility for disseminating information about the projects themselves and any learning and teaching materials developed from them. As part of the dissemination process, reports of seventeen completed projects are available.

Another research organisation, the National Foundation for Educational Research in England and Wales has acknowledged the significance of information skills by appointing a liaison officer for schools. The foundation has similar aims to the British Library's Research and Development Department, and it is involved in fostering the implementation of information skills programs and in disseminating the research results to schools, education authorities and teacher education institutes.

Canada. Canada too is prominent in its information skills activities and progress. One of the leading exponents is Ken Haycock, who is involved in curriculum development with the Vancouver School Board. He is well published, and he has received recognition in his home country for his work. He is internationally known as well, and he recently led workshops with Carol-Ann Haycock in Australia (July-August, 1986) on information skills and cooperative teaching and planning.

The Ontario Ministry of Education has adopted resource-based learning as its preferred model for curriculum development. It describes a partnership among principal, school board services, teachers and teacher-librarian. A successful partnership requires knowledge of, and respect for, the skills of others, their philosophies of education and their responsibilities. The partnership operates within an environment of cooperation, support and communication. Each partner needs

> . a belief that the personalizing and individualizing of programs for students are essential to the development of lifelong learners and self-confident, resourceful citizens;
>
> . an understanding of the impact that learning resources can have on learning;
>
> . a willingness to use the variety of resources that are available from within the school and the community;
>
> . an understanding of various teaching techniques, including a willingness to experiment and try new or alternative methods;
>
> . an understanding of how technology can be used to advantage in meeting many learning needs and in helping to personalize and individualize both the instruction and the learning experience designed for students;
>
> . a positive attitude towards innovations and change;
>
> . a desire to become involved in co-operative planning, teaching, and evaluation;
>
> . a willingness to communicate openly and effectively;
>
> . a willingness to know and respect each other's skills, knowledge, and responsibilities. (Ontario Ministry of Education, 1982 : 10)

Australia. Information skills are being addressed by education authorities in Australia. One Catholic Education Office has applied Bloom's taxonomy of skills to the development of resource-based learning and has identified strategies appropriate for student development at all levels of the taxonomy. (Barton and others, n.d.) The point is made that resource-based learning is one approach to the learning of information skills.

A different approach is presented in *Information Skills in the Primary School.* (Northern Territory Department of Education, 1984) Although the identification and location of resources, and the interpretation and reporting of information are given as a rationale for teaching information skills, the tables of skills for Transition to Year 7 assume a timetabled library lesson, which may contradict the effective teaching of information skills within the school curriculum.

The Western Australian Beazley Report (1984) has been referred to already, and akthough no firm policies for information skills have been developed as a consequence, it is important to note that several living skills it lists have direct application to information skills. For example, some of the intellectual skills are critical analysis and problem-solving; knowledge acquisition skills include information seeking, organizing, analysis and synthesis; one mathematic skill is interpreting information presented in mathematical tasks; and one computer management skill is communicating by computer keyboard skills. (Committee of Inquiry, 1984:2.19).

Teaching Students How to Learn: Ideas for Teaching Information Skills (1984) was published by the Education Department of Tasmania. It offers a teaching approach, examples of the implementation of the approach in the classroom, ideas for developing a whole-school approach, and materials for use in teachers' seminars. Information skills are grouped according to locating, selecting, interpreting, evaluating and communicating information. The document is an interesting one for its emphasis on teaching as opposed to learning.

In November 1985, the Education Department of Victoria released a draft framework for teaching information skills, which encompass study skills, library and locational skills and research skills. Four categories of information skills are identified: identifying and locating sources, information intake, organising information and communicating information. The framework follows nine questions for students, adapted from the work of Michael Marland and others (1981) in the United Kingdom.

> What do I need to do?
> Where can I get the information?
> How do I get at the resources I want?
> Which resources shall I use?
> How shall I use them?
> What information shall I record?
> Do I have the information I need?
> How shall I present my information?
> How have I done?
> (Education Department of Victoria, 1985:8)

In New South Wales, a working party has been established to produce a guidelines document for information skills for years K-12. The working party consists of several prominent educators with expertise in curriculum design, one of whom is also a member of the Commission on the Future, as well as a number of teachers and teacher librarians. The aim of the guidelines is to provide teachers and administrators with a structured and comprehensive framework for students developing information skills within the context of the school curriculum. The guidelines, while not prescriptive, assist in identifying appropriate processes and student behaviours involved. A process continuum has been suggested, beginning with Process Phase A Definition of Purpose and ending with Process Phase E Use of Information. Each phase is subdivided into process steps, for example,

> Process Phase A: Definition of Purpose
>
> > Process Step 1: Clarify the task
> > Process Step 2: Review personal knowledge and skills

and each process step has its specified learning outcomes espressed as behaviours, for example, Process Step 1: Clarify the task

Behaviours: 1. Clarify the meanings of words
2. Identify and interpret key words and ideas in the task

An explanation which includes teaching and learning strategies is suggested for each behaviour, for example,

Process Phase A: Definition of Purpose

Process Step 1: Clarify the task

Behaviours	Explanatory Note
Students should be able to:	
1. clarify the meanings of words	Students may need to consult a dictionary, a thesaurus or a person in order to set the context of the task.
2. identify and interpret key words and ideas in the task	Key words or concepts may need further investigation by students either individually or in groups. Students should understand what a question is asking, e.g., how? when? where? why?

Information Skills in Schools

It is possible to identify from the literature three key elements in effective information skills programs in schools, and each element has particular implications for principals, teachers and teacher librarians. These elements are

1. the adoption of an integrated approach to information skills
2. the cooperative planning and teaching of information skills
3. effective resource selection and management

1. The Adoption of an Integrated Approach to Information Skills. A range of skills, knowledge and attitudes can be built into the existing or planned curriculum in such areas as science, language, art, mathematics, social studies and so on. Information skills then are not ends in themselves, but are part of processes concerned with meaning, understanding, knowing, doing, thinking, imagining, expressing and communicating. Information skills are embedded generally in education programs in schools.

The integrated approach is based on the following principles of the systematic teaching and application of skills, developed by Fraser and Johns.

1. The skill should be taught functionally, in the context of a topic of study, rather than as a separate exercise.
2. The learner must understand the meaning and purpose of the skill, and have motivation for developing it.
3. The learner should be carefully supervised in his first attempts to appy the skill, so that he will form correct habits from the beginning.
4. The learner needs repeated opportunities to practise the skill, with immediate evaluation so that he knows where he has succeeded or failed in his performance.
5. The learner needs individual help, through diagnostic measures and follow-up exercises, since not all members of any group learn at exactly the same rate or retain equal amounts of what they have learned.
6. Skill instruction should be presented at increasing levels of difficulty, moving from the simple to the more complex; the resulting growth in skills should be cumulative as the learner moves through school, with each level of instruction building on and reinforcing what has been taught previously.
7. The student should be helped, at each stage, to generalize the skills, by applying them in many and varied situations; in this way maximum transfer of learning can be achieved. (Fraser and Johns, 1963 : 311)

There are many librarians who would attest to the failure of school library skills programs of the past. These highly structured, content-packed series of lessons usually took the form of activities or assignments on such topics as "Using the card catalogue." The lessons were supported by skill building kits, and more recently computer programs, which served to reinforce the isolation of library lessons from the class programs. Sometimes, efforts were made by teacher librarians to relate library lessons to the class program through a series of parallel library and classroom lessons, or by building lessons around questions which students had asked the teacher librarian. These efforts were hit and miss at best and were not based on a planned developmental sequence of learning experiences designed to meet student needs.

The experience of Brake (1980), a British Library researcher, is a familiar one. The Need to Know project, which he coordinated, aimed to develop a teaching program for 14-15 year olds which would alert them to the importance and use of community information in the management of their everyday living. A library skills program had been taught *twice* to the students in school, yet they lacked such basic skills as understanding alphabetical and numerical order in relation to information retrieval, the use of reference materials, and the ability to use indexes.

Marland (1981) argues persuasively in favour of a spiral curriculum and confirms the Bullock Report finding that there is no one school subject or activity in which information skills can be effectively taught and developed. A spiral curriculum is most appropriate for a didactic and contextual approach focussed on skills and on process. Skills are introduced, explained, and practised, and pursued in greater depth as students proceed through school, refining the processes of handling and using information in a range of curriculum areas and subject disciplines.

The school principal is a significant factor in a truly integrated whole-school approach to information skills. If the development of independent learners is a goal of a school's program, the principal can contribute to its realization by involving staff in the development of school policies, by arranging for professional development and inservice courses for staff where necessary, by demonstrating leadership within the school and supporting staff initiatives, and by encouraging a school climate conducive to open communication and successful teaching and learning. Marland and others (1981) argue that the principal must take responsibility for the development and implementation of an integrated information skills program.

Research supports this view of the role of the school principal. In a study of six schools in an outer London borough, Sneath (1985) found that the factors which should be considered when implementing information skills across the curriculum were the enthusiasm of the principal, the enthusiasm and interest of staff and librarians (not always teacher librarians in British schools), the school environment, the stability of the staff and the resources available. In more general terms, McDonald (1985 : vii) identified a principal who is aware of the importance of the school library and who organises the school's staff, teaching, space, time and finances accordingly, as common to quality school libraries involved in integrated information skills programs.

2. The Cooperative Planning and Teaching of Information Skills Programs. The teachers' and teacher librarians' contributions to a whole-school information skills policy rest on cooperative planning and teaching for effective development. While the principal is most influential in policy development across the curriculum, teachers and teacher librarians (so called because of their qualifications in both teaching and in school librarianship) are influential in the planning and teaching of information skills programs or in translating policy into practice. Haycock goes so far as to claim that

> the single most important role of the teacher-librarian is cooperative program planning and teaching with classroom teachers. (Haycock, 1982 : 5)

As the focus moves from determining what students are to do to what they are to learn, so programming for information skills moves from the teacher librarian alone to the teacher librarian and teacher as equal partners in the educational enterprise. The principal of course has a continuing commitment to cooperative planning and teaching, but the role is one of administrator rather than practitioner.

The Ontario Ministry of Education's *Partners in Action* (1982) identifies the teacher's contribution to the planning and teaching partnership as the knowledge of the abilities, learning styles, and educational needs of students as well as subject experience and knowledge of particular curriculum goals and objectives. The teacher librarian's contribution to the planning and teaching partnership stems from knowledge and experience of classroom teaching and skills in resource selection and management.

More detailed suggestions for the contributions of teachers include

(a) participating in the planning and implementation of the school's total curriculum;

(b) involving the teacher-librarian in all stages of planning, teaching, and evaluating units of work;

(c) accepting prime responsibility for the learning experience of the students assigned to them;

(d) designing relevant activities for students to ensure the integration of content, attitudes, and skills in all subjects;

(e) actively selecting resources in cooperation with the teacher-librarian. (Lundin, 1983 : 11)

Teacher librarians can contribute by

(a) participating in the planning and implementation of the school's total curriculum, particularly by advising on the use of resources;

(b) selecting with the involvement of teachers, acquiring, organizing and operating a collection of resources and services appropriate to meet the needs of the school;

(c) cooperating with teachers in the planning, teaching, and evaluation of units of work;

(d) coordinating with teachers to determine what will be covered for particular groups of students, when and who will accept prime responsibility for the teaching and application of skills;

(e) teaching some of the skills as mutually agreed upon;

(f) giving incidental, follow-up support and reinforcement to individual library users;

(g) extending children's interests and skills beyond the traditional subject areas of the school's curriculum;

(h) assisting students to make transitions from one setting or stage to another, i.e., primary to secondary school, secondary to university, college or work;

(i) provide any service which will help improve the quality of the experience which teachers and children have in schools. (Lundin, 1983 : 12)

One of the services which teacher librarians can provide to improve the quality of learning experiences involves the professional development of teachers. Studies in the United Kingdom (Brake,1979; Hounsell, Martin, Needham and Jones, 1980; Vincent, 1980) and Australia (Juchau, 1980; Bunbury, Finniss and Williams, 1981) indicate that many teachers themselves are not sophisticated users of information, nor have they developed a broad range of information skills. Professional development activities for teachers which can be initiated and coordinated by the teacher librarian include inservice sessions, current awareness, listings of new materials, bibliographies, and involvement of administrators and teachers in establishing new information services. Without the professional development of teachers, for which education authorities as well as teacher librarians have a responsibility, it is likely that information skills will not be adopted across the curriculum and will be developed either by interested teachers or as a separate skills course, reverting to library skill lessons which have been shown to be ineffective.

The active involvement of teacher librarians in whole-school information skills programs represents a significant change from their previous role in offering curriculum support, essentially a reactive role. Curriculum development, in all its phases of design, implementation and evaluation, offers teacher librarians an opportunity to initiate change in schools within the context of information skills programs.

The move by teacher librarians into school library services for teachers has been accompanied by a growing realisation that teachers are part of the clientele of the school library. This makes sense in terms of the maximum diffusion of the teacher librarian's expertise and energies: through one teacher, the teacher librarian can reach a whole class of students. One consequence has been that duplication of programs has been reduced. This is perhaps more relevant in primary schools where it was not uncommon to find in the one school a reading program based in the classroom and a literature program based in the library. Developments in the teaching of reading suggest that reading and literature programs should be integrated, operating on some occasions from the classroom and on others from the library and other learning spaces. Another consequence has been that teachers and teacher librarians can plan together a developmental sequence of learning experiences based on information skills. Haycock (1985) is critical of those teacher librarians who believe they are either language arts teachers working in an enriched classroom or reference librarians responding to students' information needs on demand.

Cooperative planning and teaching presupposes flexible use of the school library. It seems that at present, space and time are used more flexibly in classrooms. It is not unusual for a classroom to be devoted to a theme for a period of time, for tables and chairs to be rearranged, for activity corners to be established, for the timetable, especially in primary schools, to be varied according to the needs of students. The school library should be used in a similar way, recognising of course that it houses a considerable proportion of the school's collection of information resources and associated equipment.

It needs to provide space for individual, small group and large group activities as well as for the display of student work. Work stations devoted to particular information sources, say periodical indexes, a fiction collection or film strips, may be established as appropriate to class programs in information skills. In this way, the school library becomes an extension of the classroom, with teacher and teacher librarian working in both the classroom and the library. Timetabling for the use of school library facilities should be similarly flexible to take account of the use of information resources in information skills programs.

3. *Resources Selection and Management.* A whole school approach to information skills with its emphasis on resource based learning implies that a wide range of information resources will be available to students and to teachers.

For students, the resources will be characterised by a range of formats, readability levels, content and curriculum applications. The variety of resources will ensure that students' learning styles match the resources to improve, reinforce and enrich their learning. Activities in which resources are matched to students interests and abilities will individualise learning and provide opportunities for students to develop independent learning skills.

For teachers resources related to curriculum development are most important particularly when based on school experience. (Juchau, 1981 : 182) Teachers need current, reliable and comprehensive information and resources should be selected accordingly. (Broadbent, 1981 : 96)

Given the impact of information technology on schools and the consequent emphasis on microcomputers it is necessary to consider their impact on students and the implications of that impact for information skills programs. Sinclair (1985) contends that the most impressive feature of microcomputers is their potential for changing the way people think, particularly in terms of higher level cognitive skills. He claims that

> The activity of handling information in the classroom through the use of data management and processing programs and activities, simulations and word processing may be expected to encourage flexible, and adaptive and independent thinking . . . . It will help stimulate the development in students of skills in analysis, synthesis, decision-making, problem-solving and evaluation. (Sinclair, 1985 : 3)

Skills such as these are at the core of information skills programs and are involved in all the processes of defining the purpose of an information task, locating sources, selecting data, interpreting and presenting information.

The outcomes of the Schools Information Retrieval (SIR) Project in Britain also highlight the improvement in the quality of students' work. Trialled over a two year period the SIR project met its objectives in assisting students in their research for assignments and in demonstrating to students the underlying principals of computerised information organisation. The SIR program allows teachers and students to build their own databases and to retrieve information from them. One important finding from the project in terms of schools providing resources matched to a range of student ability levels is that the less able students were able to cope well with what is a complex and sophisticated computer program. (Rowbottom, Payne and Cronin, 1983 : 3)

Several research studies have concentrated on the use of microcomputers as communication tools and have looked at online searching in information skills programs. Wozny (1982) demonstrated that online searching introduced a world of information to students and that their assignments reflected the use of current materials such as government documents and conference proceedings. The teacher and the teacher librarian were found to be a major influence on student use of information, and in this instance, had planned a goal to draw students' attention to the diversity of information and information agencies.

A different student and teacher relationship in manual and online searches was identified by Levinson and Walcott (1985). The online process stimulated more interaction among teacher, teacher librarian and students as the search was formulated and the information retrieved. Levinson and Walcott make an interesting point that because technology often causes teachers to reevaluate their traditional strategies, there is a chance that the same level of interaction can be achieved through more traditional manual searching. There seems to be no sound reason for assuming that manual and online searches are essentially different from each other in terms of the processes which students use in their information tasks.

Fiebert (1985) has extensively described the effect of online searching on students' information skills. Two new skills have emerged. One is the reading and interpreting of print-outs, and the other is the writing of abstracts. More ambitiously, Fiebert claims that the student has not always been able to express an information need adequately when encountering traditional, printed and indexed sources, and that online searching provides another tool for approaching a topic which is more specific, more flexible, faster and more current. For some students, it is one way of taking control of some of their own learning.

The online industry is aware of the potential use of its products in schools. Summit (1986), President of DIALOG Information Services Inc., the host for ERIC, has called for the introduction of a fourth "R," Retrieval, in schools, arguing that students or "baby end-users" as they are known in the industry are encouraged to think more precisely about the formulation of research strategies when accessing information online. He suggests that teachers and teacher librarians will be prime movers in developing instruction programs with an educational rationale. Similarly, George Maltby (1986), Managing Director of Overseas Telecommunications Corporation, claims that it makes sense to teach students at school how to search databases. Remote databases are a relatively new resource for schools, and possibilities for exploiting databases, especially for downloading them into inhouse databanks have not yet been fully explored.

The teacher librarian has expertise in resource selection and management. The information skills program will be strengthened if the teacher librarian builds a functional resource collection appropriate to the unique needs of the curriculum, the students, teachers, school executive and the school community. In building the collection, the teacher librarian consults with staff and with students and cooperatively evaluates the resources objectively according to criteria documented in a school based library policy. There should be an educational rationale for all the resources in the collection.

The Ontario Ministry of Education's *Partners in Action: the Library Resource Centre in the School Curriculum* (1982) lists the following areas of responsibility for the teacher librarian in the selection of resources:

- reading current reviews of materials and equipment and keeping teachers informed about new resources;
- visiting displays of new materials;
- previewing resources such as videotapes, multi-media kits, filmstrips, and audiotapes;
- working with teachers to select appropriate print and non-print materials for purchase;
- developing and maintaining materials that will assist teachers in the selection of textbooks and reference texts for classroom use;
- developing a useful collection of reference materials, periodicals, popular fiction, and other resources not specifically geared to any one subject program;
- assisting with the establishment of the school's learning resources selection policy;
- discussing with teachers the needs of exceptional students in the school and making a special effort to ensure that the library resources centre collection contains appropriate materials to meet these needs;
- evaluating the use of various types of print and nonprint resources;
- using appropriate aids for the selection of resources;
- participating in board-sponsored evaluation committees;
- adapting and developing learning resources to meet specific program objectives and learner needs;
- adapting and extending the basic research-skills program to meet the special needs of individual students. (Ontario Ministry of Education, 1982:36)

The teacher librarian needs to be aware of new learning materials and equipment. Selection tools may need to be extended to include resource review information online on the Australian Schools Catalogue Information Service (ASCIS) database, and curriculum information on the New South Wales Curriculum Information Network (NCIN) database.

New technology should be explored with a view to improving teachers' and students' access to information through commercial inhouse and remote databases. Information can be printed or ordered online. Some information, such as ASCIS records, can be obtained on disk and used for cataloguing and indexing the school's resource collection or compiling resource bulletins and bibliographies for teachers.

It is reasonable to expect that the nature of resource collections in schools will alter, expecially when current information is required. For example, the AAP database, a news service, is updated daily. In some instances as in the case of the New South Wales curriculum Information Network (NCIN) database, information is available only online. New periodical titles may be added to the collection in response to frequency of citation in online searches. Reference monographs such as the *Macquarie Dictionary, Australian and New Zealand Encyclopedia*, directories and yearbooks may be replaced by their online counterparts. Such a shift in the nature of the collection and a reallocation of funds has occurred already in the Montgomery County Public Schools in the United States. (Pruitt and Dowling, 1985)

Resource management involves budgeting and forward planning. It is crucial that the teacher librarian adopt an advocacy role and interpret the function of the library in the school curriculum to the principal, teachers, parents, students, consultants and regional officers so that realistic funding priorities can be established on a school wide basis.

Access to resources is one aspect of the school's resource management plan and is described by Leisener (1985) as intellectual and physical access to the collection of print, non-print and human resources. It can include shelving arrangements whether integrated or not; the format of indexes to the collection, whether on cards, microfiche or online; the arrangement of indexes to the collection, whether dictionary catalogues, subject indexes, KWOC lists; the indexes to collections beyond the school, whether community files, local union lists; the resource sharing networks and interlibrary loan services to which the school library belongs.

Document delivery is an essential part of access to resources beyond the school and will be enhanced by videotext and electronic mail systems. Citations produced by an online search are to documents of all types, many of which will not be in the school's resource collection, and there is considerable interest in resource sharing in schools. The Australian Library and Information Council (ALIC) has commissioned a study to determine the use of networks and information retrieval systems by schools. In addition, schools in most Australian states are participating in a current study of interlibrary lending.

Access relates also to equipment. Student use of audiovisual equipment does not seem to be widely accepted. Information skills programs highlight the need for student access to equipment, irrespective of its cost. Instruction manuals and maintenance sheets for equipment may need to be located in the collection or at least with items of equipment so that students can use them to develop their skills in independent learning. Circulation policies and borrowing procedures equipment may need to be reviewed in the light of those related to materials.

Conclusion

The impact of information technology on society has been far-reaching. and one area of the school curriculum which has been affected considerably is information skills. So that students can function effectively in the Information Society. it is essential that they develop the knowledge. skills and attitudes necessary for information literacy. Schools in the past have responded to resource based learning by developing library based programs. The challenge now is to reshape and extend those programs so that they are information based. In addition to learning how to learn. students will learn how to specify an information task. locate information sources select data and interpret and use information to complete a task or solve a problem.

Successful information skills programs are characterised by a whole school approach in which the school principal has a vital role. These programs rely on cooperative planning and teaching between teacher and teacher librarian, each bringing a specific expertise to the design, implementation and evaluation of information skills programs. Effective resource selection and management is a key factor in developing students' independence in learning. It is in this area that the teacher librarian has a unique and significant contribution to make. Information technology enhances information skills programs while at the same time providing teacher librarians with opportunities to expand the range of resources available to teachers and students and to ensure that they have access to those resources. Teacher librarians know how to exploit information and information technology. It is imperative that schools use that knowledge for the benefit of their students.

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THE EDUCOLOGY OF INTEGRATING HANDICAPPED STUDENTS: PROBLEMS IN DEFINITION AND EVALUATION

David Thomas
School of Education, Flinders University
South Australia

Introduction

It is now eighteen years since Lloyd Dunn (1968) wrote his seminal paper, "Special Education for the Mildly Retarded: Is Much of it Justified?" In the meantime, there has been major legislation in the USA in the form of Public Law 94-142 (1975) which has been widely interpreted as a blueprint for improved services for the handicapped and for their integration into ordinary schools. In Britain, Section 10 of the Education Act (1976), the Warnock Report (1978) and the Education Act (1981) have provided, in varying degrees, official encouragement for integration. In Australia, there has been no equivalent federal legislation, but policy statements and departmental reports at state level, notably Victoria's Ministerial Review of Educational Services for the Disabled (Collins, 1984), suggest an official climate of opinion which is at least overtly favourable to integration.

Yet integration remains a key issue in special education throughout the English speaking world. It seems that the euphoria of the late seventies has given way to informed concern about the appropriateness of the wholesale adoption of integration policies. A survey of attitudes to integration in New South Wales has, for example, indicated that principals of government and nongovernment schools do not believe that current support services in that state are sufficient for successful integration (Center, Ward, Parmenter & Nash, 1985). In Britain, an eminent special educator has suggested that much of the inertia which delays the process of integration there is based upon recognition of the achievements of special schools in contrast to the limited services for handicapped children in ordinary schools (Brennan, 1982).

American reservations have tended to be more subtle, focusing attention on the dynamics of mainstreaming, especially the problems of acceptance experienced by mainstreamed handicapped students (Sabornie, 1985), the lack of preparation of nonhandicapped students to receive the handicapped (Strain, Odom & McConnell, 1984), the consequences of the handicapped students' limited social skills (Gresham, 1982) and the need for the retraining of ordinary teachers to bring about attitudinal change favourable to successful integration (Meyen & Lehr, 1980; Kunzweiler, 1982). Recent reminders that at least for the intellectually handicapped, there can be no single solution to the question of placement have been sounded on both sides of the Atlantic, by MacMillan (1982) in the USA and Fish (1985) in Britain.

A further reason for integration remaining a current issue is that the pace of integration within the schools has not matched the generally favourable climate of official opinion. This has been highlighted in Britain by Booth (1981) and Swann (1984), who have shown that while the number of students in special schools has fallen, it has actually increased as a percentage of the total school population. In fact it has been claimed that many professionals outside the schools contrive to thwart parents' legal rights to participate in decision making about placement, consequently reducing the number of students integrated into ordinary classrooms (Sharron, 1985).

A recent study of identification and integration rates in the USA indicates variations in practice there (Noel & Fuller, 1985). These authors undertook an analysis across states on the basis of varying levels of federal vs. state and local school aid. They found that states providing the highest level of local funding tended to have a higher proportion of learning disabled students in special classes. Since a mere eight per cent of the excess costs of educating a handicapped student come from federal funds, poorer school districts, according to Noel and Fuller, tend to opt for the cheapter option: full integration. The situation is complicated by variation in what passes for mainstreaming. For example, Stobart (1986) reports that many Californian students are considered mainstreamed even though their integration with nonhandicapped students is restricted to assemblies, recess, lunch and physical education.

The concern generated by such findings is shared by committed integrationists in Australia, and there are undoubtedly parents who feel that many more handicapped children than are currently the case could be successfully educated in ordinary classrooms. It is difficult to gauge the validity of such claims or even to determine whether there is, in practice, with the possible exception of Victoria, a significant move to integration here. One admittedly crude indicator is the number of children in government special schools as a proportion of the total school enrolment, taken over successive years. Analysis of the data published by the Australian Bureau of Statistics for the period of 1981 to 1984, the only years for which figures are available, does not show any significant change. In fact none of the six states, nor the Australian Capital Territory nor the Northern Territory recorded a change of more than 0.08 per cent in the percentage of students enrolled in special schools, with the national percentage falling by a mere 0.005 per cent.

These and similar details guarantee that integration remains in the forefront of debate in special education, a position which is sometimes reinforced by the dramatic language of writers in this area, e.g.,

> In the 1980s educators and parents are witnessing a reversal of the educational pendulum. Just as the best intentions of special education idealists have led us astray, so the hounds of

> revenge are trying to revert to times past (Ammer,1984:15).

Such polemics tend however to lead to a polarisation of views making it necessary to identify sources of ambiguity and avenues of constructive research. Over the last decade the flavour of the discussion has shifted to include the dynamics of integration and teachers' attitudes to mainstreaming, but much of the debate remains superficial and confused. What is needed so as to allow the debate to progress constructively and fruitfully is clarification of critical issues within special education. Two of those critical issues are definition and evaluation.

Definition

A major source of ambiguity relates to variations in defining integration. Some interpret it as a complex of services to support the ordinary teacher which is so far reaching that student progress or adjustment is virtually ensured. The definition of Kaufman, Gottlieb, Agard and Kukic (1975:3) is a good example:

> the temporal, instructional and social integration of eligible exceptional children with normal peers based on an ongoing individually determined, educational planning and programming process and requires clarification of responsibility among regular and special education, administrative, instructional and supportive personnel.

Birch (1974) went even further in outlining fourteen features in his definition, including the provision of a withdrawal room for the special education teacher and the notion that selection of handicapped pupils for ordinary classes should be based on matching their educational needs to the capabilities of the school's programme rather than on the severity of their disability. More recently Bowd (1986) has added that integration invokes the idea of a range of educational settings and a change in the education of the handicapped students' peers.

Rather than definitions, these are in the nature of praiseworthy objectives which tend to reject any integration practices as integration unless they are successful. To define integration or mainstreaming in terms of the conditions for its successful implementation is to confuse definition with objectives. Such an approach is likely to be self defeating since it discourages analysis of the factors which adversely affect the practice of integration. Clearly any broad definition must accept the possibility that integration can go wrong too.

There are of course other definitions which overcome this difficulty by simply equating integration with placement in the ordinary classroom. Those of McNeil (1977) and Solomon (1977) are examples of this. The problem is then more subtle. Such definitions describe a state of affairs which has always been with us, namely those classrooms which have one or more handicapped students either because there is no vacancy for the children in segregated classes or because their disability has been recognised only by the classroom teacher and sometimes not even by the teacher. This is very different from a classroom where a handicapped child has been placed as a matter of deliberate policy. It is the difference between the accidental and the intentional. In the latter case, the handicapped child's interactions with her or his peers and the curriculum are likely to receive significantly more attention than in the case of a child unintentionally placed in the ordinary class. To call both circumstances by the same term is misleading, yet placement definitions do not distinguish between them.

A further complication in definition arises when we accept as integration a situation in which a handicapped child does not spend all her or his time in the ordinary classroom. For example, in one of the high schools in the Adelaide metropolitan area, there are several visually impaired students who are withdrawn for counselling and tuition by a specialist teacher for an average of only two lessons a week. For the rest of the time they follow the ordinary timetable. Are these students integrated? In another local school mildly mentally retarded students in a special class join their nonhandicapped peers for physical education and craft work for just four lessons a week. Are these students integrated too?

It is obviously unsatisfactory to use the same term to describe these two examples as though they were equivalent. At the same time we would not want to reserve the term 'integration' only to describe situations where the handicapped child spends the whole of her or his time in the ordinary classroom since this would rule out what some consider ideal mainstreaming, namely withdrawal restricted to individual or small group remedial teaching for two to five periods a week. In short, we need within our definition a precise reference to the minimum proportion of time a student must spend in the ordinary classroom to be considered integrated. Any less time constitutes partial or minimal integration.

The time dimension has naturally been recognised as an important consideration in decisions about integration and has figured in some definitions. There are however major differences to be found in these definitions. At one extreme 'integration' has been used to describe placement in a special class in an ordinary school, where association with the nonhandicapped is restricted to nonacademic subjects (Bricker, 1978). Bricker's intention was to force a distinction between 'integration' and 'mainstreaming'. Birch (1974) includes in his complex definition attendance by the handicapped child for at least half of her or his time in the ordinary classroom. The Massachusetts regulations regard a student as fully integrated only if she or he spends seventy-five percent of school time in the ordinary classroom (De Leo, 1976). The figure of seventy-five per cent, while being arbitrary, is practical since it allows us to distinguish between full, partial and minimal integration. In fact the Massachusetts regulations specify 50 to 75 per cent as the proportion of time which the handicapped student must spend in the ordinary classroom to be deemed predominantly integrated and less than 50 per cent for partial integration.

This categorisation parallels distinctions found in Scandinavian special education and in the Warnock report (Warnock, 1978). That report recognises three levels of integration: functional, social and locational. Functional integration is broadly equivalent to full integration, with the handicapped child participating for the most part in the educational programmes of the ordinary class. Social integration is the placement in a special class sited in an ordinary school with occasional participation in the activities of nonhandicapped students on both a formal and an informal basis. The salient feature of locational integration is the handicapped child's placement in a special class or a special school sharing the same campus as the ordinary school and is more akin to minimal integration than partial integration. In the latter case, interaction with normal peers is limited to recess, travelling to and from school and the infrequently organised shared activity. For many integrationists, locational integration is mere tokenism: for others, a necessary chain in a continuum of services for handicapped children.

These distinctions, whether directly linked to a time dimension or not, are not merely elaborations, but describe quite different educational circumstances, and therefore have to be taken into account in formulating a definition. They are important too because of the complex nature of teacher reactions to integration. Opponents of integration differ widely in the extent to which they would willingly integrate handicapped students (Thomas, 1982). Some would be ready to accept moderately handicapped students on a halftime basis while others would be opposed to any contact. These variations necessitate a precise definition which would guarantee that discussants are at least talking about a clearly prescribed set of circumstances. At the same time, for the reasons given earlier, it must not be unduly complicated by a set of conditions deemed necessary for successful implementation, nor must it confuse the unintentional placement of a handicapped child in a regular class with her or his deliberate transfer there. Similarly, because the time the handicapped child spends in the mainstreamed class has become a significant variable in decision making, it must be incorporated in a number of related definitions, rather than in any single one.

The following definitions attempt to meet these requirements. To distinguish between a situation in which a child spends nearly half her or his time in the ordinary classroom and one in which she or he spends less than an hour a day or simply makes occasional visits, a further distinction between partial and minimal integration is necessary.

df. A student, designated as handicapped, is fully integrated when she or he spends at least seventy five per cent of school time in the ordinary classroom as a matter of deliberate policy, made known to the entire staff.

df. A student, designated as handicapped, is predominantly integrated when she or he spends between fifty and seventy five per cent of school time in the ordinary classroom as a matter of deliberate policy, made known to the entire staff.

df. A student, designated as handicapped, is partially integrated when she or he spends between twenty five and fifty per cent of shool time in the ordinary classroom as a matter of deliberate policy, made known to the entire staff.

df. A student, designated as handicapped, is minimally integrated when she or he spends between nil and twenty five per cent of school time in the ordinary classroom as a matter of deliberate policy, made known to the entire staff.

The advantage of such value free definitions incorporating the notion of a continuum of integration is two fold. First, they do not confuse practice with objectives and allow for an analysis of unsuccessful as well as successful integration programmes. Secondly, they fit in with a model of educational services, now familiar to special education, ranging from home tuition or institutionalisation to full integration.

Evaluation

A Timely Need. An examination of the literature on integration suggests that the question of evaluation is especially problematical. While this is generally true across educology (the literature about education) and the literature of the social sciences, in the case of integration it is largely because there has been little systematic evaluation. This may be partly explained by a reluctance of many academic reseachers, with some notable exceptions such as Kaufman, Agard and Semmel (1978), to undertake lengthy, complex studies in the wake of the much criticised efficacy studies of the sixties and seventies. The process of evaluation in integration has inspired, until recently, scant interest beyond the level of description and therefore has remained generally superficial. Some of the implications of this comparative neglect have been highlighted by Brennan (1982:9):

> Carefully organised projects are often restricted to descriptive

> surveys . . . they are of little assistance when choices must be made. Perhaps it is this scarcity of relevant and objective evaluation which keeps the subject of integration alive as an almost unrestricted area for the projection of philosophical, social and political ideas and theories.

Pragmatists, who believe the search for the most appropriate educational environment for each handicapped student should take precedence over commitment to any particular philosophy, will recognise these sentiments. At the same time, the unfulfilled promise of integration does not constitute proof of its impracticality, but simply reflects how little has been learned about the dynamics of mainstreaming.

This situation is now changing for the better as a result of a spate of interesting studies, facilitating detailed appraisal of the conditions which favour or mitigate against the successful practice of integration. Undertaking such an appraisal is now opportune in the light of the hardening criticism of mainstreaming. It would also serve to question at least some of the generalisations which are taking on the status of fact rather than opinion. One such example is a recent statement of the Australian Association of Special Education (Maartens and Blue, 1986) that

> if the integration of children with special education needs is to be successful, then regular classroom teachers must receive basic training in special education.

The clear implication here is that ordinary teachers can not successfully integrate handicapped children without such training. While its logic is appealing, there is no empirical evidence to support this view, and furthermore it is contradicted by those regular teachers who have successfully integrated handicapped students, without specialist training. Systematic evaluation should, in considering what constitutes teacher effectiveness in mainstreamed settings, tell us something about the relationship between such training and the outcomes of integration.

A more subtle reason for regarding evaluation as timely relates to the matter of teacher "burn-out." It appears that many teachers who were cooperative in the early stages of integration in their schools are now resisting further participation (Scott, 1982; Thomas, 1985). Some of these believe that integration is an added burden which ought to be shared by all members of staff and not shouldered only by the willing souls. Such a phenomenon raises questions about the ethics and organisation of mainstreaming which become critical after a few years into the life of an integration project. These questions cannot be properly answered without a careful appraisal of the phenomenon itself.

Problems in Evaluating Integration: The Efficacy Studies. There is of course nothing new about evaluation in the organisation of special education. The efficacy studies which aimed to see whether students in special classes, with the benefit of specialised teaching and greater individual attention, made better progress than integrated students were initiated in the early sixties. Reviews of these studies have been generally critical, pointing to inadequate sampling and research design (Kavale, 1979). The opinion expressed by Cronbach (1975) that the changing nature of schools prevents meaningful conclusions from the results of such studies has also discouraged replication and improvement of research design, with the notable exception of Project Prime (Kaufman, Agard and Semmel, 1978).

Some lessons, however, can be learned from an analysis of the efficacy studies. Firstly, studies which concentrate on outcomes in the sense of the relative gains made by an experimental and a control group tell us nothing about how either integrated or segregated classes may be improved. Only when the dynamics of teacher-student and student-student interactions are included do we learn about that. Secondly, there is no consensus among special educators with regard to what constitutes measurement of social development. In some studies (Schurr and Brookover, 1976; Budoff and Gottlieb, 1976) the criterion has been self-concept. In others it has been acceptance or rejection by peers measured by sociometric techniques (Gottlieb and Davis, 1973; Markus, 1978), and in others it has been observation of easily recognised behaviours such as aggression or time-on-task (Guerin and Szatlocky, 1974; Westwood, 1982).

All three approaches are measuring adjustment, not social development, but this distinction has been generally ignored. The significance of this relates to the belief of some special educators that it is the handicapped student's social and not her or his academic progress which should determine judgements about the preferred environment, a view sustained partly by expectations that academic progress will be slow for many handicapped students, wherever they are placed, and partly by the notion that it is the individual's social progress which determines quality of life after leaving school. Unless we are clear about whether social adjustment is a reasonable proxy for social development, the significance of social skills training, to which much attention is being currently paid, in integrated and segregated classes, will be difficult to calculate. The precise statement of the important characteristics of social progress would allow us to monitor the development of appropriate skills and their teaching implications for both settings.

Problems in Evaluating Integration: Teachers' Attitudes. In the last decade teachers' attitudes to integration have also been the subject of research, and here too there are problems of interpreting data. Many of these relate to the manner in which attitudes have been measured. In some cases, teachers have been asked about their position on integration, and the aggregated responses have been taken as an accurate reflection of their attitudes. In most studies however attitudes have been measured by questionnaires, and then the degree of support is substantially less. In the former case, there is little control of interviewer bias, the acquiescence response set and the social desirability factor. In other words, in face-to-face interview, there is the strong possibility that teachers will understate their opposition to integration either because this may be seen as an indication of negativism or simply because of an inclination to modify their views according to what they think the interviewer would like to hear. The impossibility of judging the intrusion of these factors makes the face-to-face interview an unsatisfactory method of assessing teachers' integration attitudes.

A further complication in this area of research has been the tendency of researchers to use unstandardised instruments or measures, like the "Attitude Toward Handicapped Individuals" (ATHI) (Lazar, 1973), which were not specifically developed to measure integration attitudes. The most frequently used instrument, the "Rucker-Gable Educational Programming Scale" (RGEPS) (Rucker and Gable, 1974), has also been criticised for assessing attitudes on the basis of the teacher's ability to make decisions about appropriate placements after reading short descriptions of handicapped students.

Valuable instruments do exist, notably the "Learning Handicapped Integration Inventory" (Watson and Hewett, 1976) and the "SBS Inventory" (Hill-Walker and Rankin, 1980), but at least to the author's knowledge, no scale has yet been published which recognises the need to assess teachers' priorities in terms of the order of significance of mainstreaming issues as well as the strength and direction of feeling which teachers have to the many issues in integration. While it is usual for an individual to rate highly, in order of priority, those issues about which she or he feels most strongly, the correlation is far from perfect. An individual may believe a particular issue should be regarded as highly significant in decisions affecting the placement of a handicapped student, but at the same time feels she or he knows too little to form a definite opinion or that individual differences among a group of handicapped students make it difficult to generalise. An example of this occurred in arecent pilot study (by this author) of teachers' attitudes to integrating intellectually disabled in a South Australian primary school. Only one of nine members of staff believed that in a list of twenty one issues there was anything more important than the students' self respect in decisions about integration, yet half had no clear opinion on whether self respect was enhanced or diminished by integration.

It can be argued that first we need to identify the basis for the teacher's position on integration by isolating those factors to which they attach the greatest importance before measuring the strength and direction of feelings on relevant issues. In this way we can avoid exaggerating the value of an individual's response to an issue which in her or his opinion is relatively trivial.

The limitations of these instruments affect not only the validity of their data about the degree of support for integration in the teaching profession as a whole, but also reduces the value of those studies which go beyond measurement of attitudes to identifying factors associated with support for or opposition to integration. These studies have their own particular difficulties in that they have frequently restricted investigation to those variables for which data are easily gathered. Thus much has been written about the correlation of age, sex and length of contact with the handicapped, but little of personality factors, influences within the respondents' families,school variables, including leadership and special educational facilities or perceived teacher competence. Generally there has been little attempt to provide a comprehensive coverage of the factors which could have a bearing on attitude formation drawn from the relevant psychological and sociological literature (Thomas, 1985a). Nor has much attention been given to identifying interaction among variables along the lines advocated for social research by Sonquist, Baker and Morgan (1973) and Blalock (1968). As a result, the significance of a variable is much harder to gauge since its effects may be due, at least in some degree, to a separate, but interrelated factor. A consequence of these limitations is that attitude studies have told us little about what are the best predictors of support for or opposition to integration among the teaching profession. Yet this constitutes important information for administrators in selecting schools and teachers to participate in integration projects.

While teachers' integration attitudes remain a major ingredient in any comprehensive model of integration, the assertion that they are the key to the outcome of mainstreaming projects has encouraged the belief that a positive attitude to integration is a pre-condition of successful integration and, by the same token, that teachers who have reservations about the wisdom of integration provide a classroom environment which mitigates against success. These assumptions hold only if there is an exact consonance between teachers' attitudes and their classroom performance. This is not however supported by empirical evidence. In fact, there are grounds for arguing that some opponents of integration make a valuable contribution to the successful integration of a handicapped student, especially when their opposition stems from a strong sense of professional responsibility (Thomas, 1985b). At the same time there are some supporters of mainstreaming who offer little assistance to handicapped children in their classrooms because they believe that interaction with non-handicapped peers is sufficient justification for integration. The implication is of course that the proper study of teachers' attitudes needs to encompass the relationship between those attitudes and teacher performance in the class. This author has found only one such study in the research literature, namely that of Bolden (1978).

Curriculum in Integrated Studies

The curricular implications of integration generate particular tension in the teaching profession. There are no clear indications or empirical evidence about what areas of the curriculum should be modified to accommodate the handicapped student. The degree to which the ordinary curriculum must be adjusted depends on the nature and severity of the student's disability, and this in turn is affected by the student's age. Generally, the problem becomes more acute the older the student, simply because in subject-based learning teachers have to take so much prior learning for granted. Cursory assessment of integration practices in high schools underlines a recurring dilemma facing many teachers who believe the value of integration rests in sharing learning experiences with ordinary students but at the same time find that major adjustments to the curriculum are necessary before many handicapped students can meaningfully participate. These teachers frequently complain that they have neither the time nor the training to operate what amounts to two syllabi and that assistance from special education teachers does not, or probably cannot, meet the demands of every subject.

On the other hand, in the author's own experiences, there is wide variation in the capacity of teachers who have no special educational training to accommodate handicapped children in their classes, suggesting that any bland generalisation about the impracticalities of integration misrepresents a complex response. It would assist those having the responsibility of deciding whether a handicapped child should be integrated, and into what subjects at secondary level, to know more about the curriculum implications. Ordinary teachers and special educators tend to assume that the technical subjects, woodwork, metalwork or domestic science, and physical education and drama tax the academic ability of handicapped children less than other subjects and therefore are the most appropriate for integration. Such assumptions need to be checked along with the interaction of the teachers' attitudes and the subjects they teach before we can draw any conclusions.

Criteria for Evaluation

Determining criteria for evaluating integration is of course the most fundamental problem and yet has received scant attention. The efficacy studies were based on the assumption that the appropriate yardstick should be the academic progress or social adjustment of the handicapped student, thus discounting the student's happiness or acceptance by peers as significant criteria. It can be argued that all these are important as are the earlier comments relating to teachers' attitudes and the curriculum. It can also be claimed that whatever the suitable criteria are, they should not relate only to the handicapped student. In other words, evaluation should take into account the interests of all the participants including regular teachers, non-handicapped students and the parents.

What seems equally important is to recognise that integration is part of a decision-making process in which the special class or special school is a valid alternative. The evaluator should bear in mind that the progress or adjustment which the handicapped child could be expected to make in a special setting remains a necessary point of comparison despite the inadequacies of the efficacy studies. Such a comparison is of course beset with major difficulties, including the doubtful reliability of our predictions about the progress of handicapped students and our limited understanding of the effects of teacher expectations on such progress. We do not know for example whether the self-fulfilling element of these expectations operates to the same extent in integrated classes and segregated settings, nor do we know how the nature and extent of the student's disability interacts with teacher expectations. The research of Babad (1977) has demonstrated that we cannot assume that the relationship between achievement and teacher expectations found in some studies of non-handicapped pupils can be generalised to special education. Despite these complications, the evaluator, in assessing an integration project must consider whether the handicapped student is benefitting as much as the student would in a special class.

As a corollorary of this comparison, the concentration of the last decade on formative evaluation needs to be complemented by carefully designed summative evaluation techniques if we are to heed the criticism of Brennan (1982) that integration studies have been restricted to description. In their review of impact evaluation techniques in the study of mainstreaming, Gerston and Hauser (1984) have shown that the ethical and logistical argument against the random allocation of handicapped students to experimental and control groups cannot be sustained if both groups have the chance of participating in different but attractively designed programmes where there is genuine uncertainty about the efficacy of the experimental programme.

The significance of this point lies in the power of a random design to check both the efficacy of integration and the quality of a particular programme. Gerston and Hauser's analysis implies too that there is a need to develop instruments which are closely based on the experimental programme because of the greater error and insensitivity of norm-referenced tests at the tails of the normal curve. This means that, in developing criteria for evaluating integration programmes, measures of academic and social gains in a pre-test and post-test design must remain an integral part of assessment, and they should follow as exactly as possible the programme's objectives.

Comprehensive evaluation of integration must however go beyond the immediate environment of the handicapped student to include some notions of systems analysis since the outcome and practice of integration depends not only on the interactions of students and their teachers, but on matters of identification and selection, morals in the teaching profession, the availability of resources and the way in which legislation and policy are enacted by administrators and principals. Some of these factors have been highlighted in a study of identification and labelling practices in California (Forness, 1985). The latter showed that a 30 per cent decrease in the number of registered intellectually handicapped students and an increase of 156 per cent of registered learning disabled students between 1976 and 1982, brought about by a combination of state policies, has led to a large number of students in the I.Q. range of 70 to 80 being deprived of both a special class education and the support services associated with integration because they could no longer be categorised as either Educable Mentally Retarded or Learning Disabled.

Similarly in Sheffield, England, the growth in support services to facilitate integration has, according to Goodwin (1983), had the opposite effect by creating another channel for referral to separate classes. These findings along with those statistics relating to the United Kingdom and Australia, mentioned earlier, demonstrate a need to monitor at regular intervals changes in the numbers of students integrated into ordinary classrooms. Such statistics are a necessary part of the evaluation process since they act as a check on the rhetoric of administrators claiming a trend to greater integration. There is also an urgent need to change the presentation of the data provided by the Australian Bureau of Statistics to allow the reader to discriminate between the numbers of students who experience different degrees of integration and to record the numbers of students moving into special schools from hospital or home-care environments as part of a move to greater normalisation.

Examination of the school and classroom environment in terms of its physical resources, morale and organisation is a further requirement of a comprehensive evaluation. Some aspects are particularly difficult to assess because judgements of the quality of an educational environment, no matter how objective and sensitive the evaluator is, incite anxiety and defensiveness from many teachers who resent inspection. Because of this predictable reaction, little research has been undertaken in identifying and assessing those school and classroom attributes which affect the outcome of integration programmes. The development of such criteria are vital if correct decisions about placement are to be made. The improvement of integration is closely linked to their development.

Conclusion

Implicit in the argument for more precise definitions of integration and for an explication of a suitable strategy for evaluation is the belief that these factors have a bearing on the eventual status of integration. Clarification of what we mean by integration and how it is best appraised is germane to our better understanding of the mainstreaming process, which in itself is a precondition of an improved service for handicapped students.

In establishing appropriate evaluation criteria, it must be borne in mind that those found relevant to the education of children with certain disabilities may not be equally applicable to all categories of handicapped. At the same time there is one principle which must underpin all attempts at evaluation, namely that the raison d'etre of integration is to normalise as far as possible the academic and social environment of the handicapped child. The challenge to all those whose actions bear upon the education of the handicapped is to marry the normalisation principle with a genuine concern to understand the reactions of each handicapped child to his educational environment. Comprehensive evaluation, unfettered by the rhetoric of integrationists or segregationists, should be designed to meet this aim. Its implementation will eventually affect not just the quality of integration practices, but resolved the more important challenge of matching handicapped children with the best available educational alternative, whatever that is.

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MAINSTREAMING MOMENTUM IN THE U.S.A. AN EDUCOLOGICAL INQUIRY

Ellen Ursula Williams
Bowling Green State University
Bowling Green, Ohio, U.S.A.

ABSTRACT

In 1973, the United States federal government passed Public Law 93-112, The Rehabilitation Act of 1973. Section 504 of this act, sometimes called the civil rights bill for the handicapped, prohibited discrimination of the handicapped in employment practices, program accessibility and postsecondary education. Additional protective legislation came under the Education Amendments of 1974 (Public Law 93-380) in which all states within the United States were directed to: plan education for all handicapped children; protect their rights and their parents' rights in relation to placement; and to provide as much of the handicapped child's education as possible in the "mainstream" of education, rather than in segregated classes or schools. In 1975, landmark federal legislation under the title of "The Education for All Handicapped Children Act" (Public Law 94-142) was passed to further ensure the educational rights of the handicapped. PL 94-142 provided the following for all handicapped children: free appropriate education; nondiscriminatory testing; individualised education programs; due process procedures for the handicapped child and the child's parents; and educational placement in the least restrictive environment with handicapped children being educated with nonhandicapped children to the greatest extentpossible. These legislative acts were part of a mainstreaming momentum brought about in part by judicial practices, educational practices, economic considerations, advocacy movements and a heightened societal sensitivity to civil rights. An educological inquiry into the variables which contributed to this mainstreaming momentum offers a scenario of the past, present and future relative to this mainstreaming.

INTRODUCTION

The quest for free appropriate public education for handicapped children in the United States has often been named "the quiet revolution" (Dimond, 1973). Some leaders in the field of special education speculate that this quiet revolution may have ended in victory with the passage of Public Law 94-142, The Education for All Handicapped Children Act of 1975 (Abeson and Zettel, 1977). This federal legislation is a public policy which affirms every handicapped child's guaranteed right to a free appropriate public education regardless of how severe a handicapping condition the child might have. Public Law 94-142 (PL 94-142) also mandates that the handicapped child be educated in the "Least Restrictive Environment." This Least Restrictive

Environment (LRE) has been described by the Act itself as follows:

> Each local educational agency must ensure:
>
> That, to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped; and
>
> That special classes, separate schooling, or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorilty. (Public Law 94-142, Section 121a.550-121a.556) *Federal Register*, August 23, 1977.)

Although this provision for Least Restrictive Environment never formally mentions the term 'mainstreaming', it does support the concept that handicapped children should not be excluded from the mainstream of normal educational settings. It should be noted that, while mainstreaming had been practised in numerous American public schools prior to the passage of PL 94-142, this reintegration phenomenon received so much national visibility following the act, that the legislation has been frequently dubbed "The Mainstreaming Law."

While numerous definitions have been developed for mainstreaming, they all have common threads -- the desegregation of education for the handicapped and the inclusion of the handicapped in as normal an educational setting as possible. There are those who would describe mainstreaming as an educational movement as did Renolds and Birch in 1977:

> The whole history of education for exceptional children can be told in terms of one steady trend that can be described as progressive inclusion (p. 22).

Others such as Sarason and Doris (1979) indicate that mainstreaming cannot be viewed as merely an isolated educational phenomena, but rather as part of a complex historical phenomena of how society at large deals with the handicapped or the deviant. If one were to make an educological inquiry into this mainstreaming phenomenon, it would be essential to conduct research on the events and activities that provided impetus to this movement. Such an inquiry would reveal that some of the major influences leading to Public Law 94-142 and the mainstreaming movement include the following: societal attitudes toward the handicapped, judicial practices related to the handicapped, educational practices for the handicapped, economic considerations, advocacy movements and a heightened societal sensitivity to civil rights (Colley, 1981; Hardman, Drew and Egan, 1984; Hargrove, Graham, Ward, Abernethy, Cunningham and Vaughn, 1983; Heward and Orlansky, 1980; MacMillan, 1982; Sarason and Doris, 1979). If the "quiet revolution" has truly been a victory for the handicapped, then it behooves us to review the military strategies employed to gain such a victory. If the "quiet revolution" is but a battle won in the face of a continuing war over equal rights and protections for the handicapped, it behooves us to plan our strategies for future encounters by understanding past and present battlegrounds.

Societal Attitudes Toward the Handicapped

> Since the advent of man, the human race has had the problem of dealing with those among them who, through disease, accident, or inheritance, were not endowed with the ability to learn and function in society as well as the majority of people (Love, 1973, p. 40).

While mainstreaming may appear to be a more recent phenomenon in the United States, historical accounts of how society has dealt with the handicapped might well be considered a chronicle of mainstreaming practices for the disabled. Throughout history, societal attitudes toward the handicapped have inevitably culminated in the practice of either including or excluding this population from the mainstream. Hewett and Forness (1977) note that societal attitude and treatment of the handicapped has covered practically the entire range of human reaction and emotions including extermination, superstition, ridicule, pity, exclusion of services and as objects of scientific study. Society has also treated the handicapped with respect, viewing them as human beings first and handicapped persons second. Hewett and Forness further note that the plight of the handicapped throughout history has been dictated by the following four aspects:

> . . . survival, or the threat of harsh treatment or annihilation by the physical and social environments; superstition, or the wide range of beliefs related to the appearance and behavior of the handicapped; science, or attempts to understand and approach exceptionality in a natural, lawful, and objective manner; and service, or the provision of human treatment, care, education and societal acceptance (pp. 3-4).

In early global history, the plight of the deviant or handicapped was often predicated on the survival concept. Early Greek and Roman history offers accounts of infanticide and abandonment as ways of disposing of the burdens of handicapped children. Diseased and disabled persons were often viewed as having no value because they could not contribute to society. Plato's belief that each class in society must fulfill its definite assignment led him to endorse the Greek laws which ordered the killing of defective children (Ross, 1979). Aristotle circa 355 B.C. stated, "Let it be a law that nothing imperfect be brought up" (Moores, 1978). These attitudes of the early Roman and Greek societies led to practices of defective infants being drowned, thrown off cliffs, abandoned in the wilderness or left by the roadside (Gearheart and Weishahn, 1976). In Athens, for example, newborns who were of doubtful parentage, weak, or deformed were left in large earthenware vessels near a temple where they would either perish from exposure or animal attack or be rescued for adoption by passersby (Hewett and Forness, 1984). The Greeks also were known to sell the handicapped or unwanted infants at slave markets. The Spartans practised the custom of having the oldest member of the community check each newborn for physical fitness to determine if the child should live. In Rome, the fathers of defective infants were given the responsibility of gaining approval from five neighbours prior to practising infanticide by means of exposure. Small reed baskets were sold in the markets for the purposes of abandoning defective babies on the Tiber River (Ross, 1979). While it should be noted that there were some examples recorded of humane treatment of the disabled during these early years, the more common practice appeared to be the eradication of the handicapped. As Abt (1965) points out, these practices were expressions of a utilitarian philosophy deemed by these cultures as necessary to their survival. At a somewhat later time, society came to view some handicapped as sources of amusement. This exploitation is demonstrated in the following historical accounts: Commodur, a Roman ruler, using crippled individuals as targets for bow and arrow practice; a market place in Rome where citizens could purchase the legless, or armless, or three eyed men, or giants or dwarfs; and the Roman, French, German and English practices or using retarded or deformed individuals as buffoons or objects of amusement at social gatherings or as court jesters (Durant, 1944; Kanner, 1964; Wallin, 1955).

Religion also had its influence on how society viewed the handicapped. Siddartha Gauthama offered the Buddhist philosophy of love, helpfulness, charity and generosity. Confucius admonished that one should help those of weak mind. Mohammed preached of the care and maintenance of the weak in understanding. The Christian apostle Paul exhorted Christians to comfort the feebleminded. The Christian accounts of Jesus offered examples of love and compassion for the blind, deaf, crippled, epileptic, dumb and paralytic (Cegelka and Prehm, 1982). As Christianity spread its doctrine of compassion for the unfortunate, the plight of the handicapped improved as they were provided with food, clothing and shelter.

During the medieval era, societal attitudes toward the handicapped were manifested in the following ways. They were tolerated as fools. They were revered as "infants of the good God" who could use their meaningless utterances to communicate with the Supreme Being and, consequently, were allowed to roam freely on the streets to offer devine revelation through their garbled speech. They were persecuted as witches or objects possessed by evil spirits (MacMillan, 1982). During the Protestant Reformation, both Martin Luther and John Calvin viewed the intellectually retarded as evil people who were filled with Satanic forces. As a result of this superstitious societal attitude, the mentally handicapped were scourged and physically tortured as a form of exorcism to drive out the evil spirits. These purgings were followed by a period of protection in the mid-seventeenth century as shelters were established such as the Bicetre in Paris. The Bicetre, founded by St. Vincent de Paul, offered shelter, clothing, food and protection from abuse for the homeless, outcast and bodily and mentally handicapped (MacMillan, 1982). According to Gearheart and Weishahn (1976), the manner in which society interacted with the handicapped prior to the sixteenth century was bleak.

> The handicapped were not accepted as totally human and were misunderstood, mistreated, and in many cases put to death. Leading philosophers, national governments, and the organized church all shared responsibility for this attitude (p. 5).

Beginning with the 1600's, there were societal attempts to understand the handicapped and provide services for them. In the late 1500's, Ponce de Leon, a Spanish monk, began to provide care and education for the deaf. In France, Valentin Huay, who associated with such intellectuals as Voltaire and Rousseau, became interested in improving the plight of the blind after he had witnessed ten blind men being exploited for public entertainment. In 1784, Huay founded the National Institute for Young Blind People in Paris. Louise Braille, who was blinded as a child, was a student and later a teacher at Huay's school. It was here that Braille met Charles Barbier, a cavalry officer who had developed a system whereby messages using raised dots could be read under battle conditions in the dark of night. Braille expanded on this concept and developed the present Braille communication system for the blind.

In 1801, Jean Gaspard Itard, a French physician, began working with Victor, "the wild boy of Aveyron," who was found wandering in the woods of Southern France. Victor, who was thought to be abandoned as a child, grew up wild. He was declared as an incurable idiot by Phillipe Penel, a renowned French scientist. Itard gained custody of Victor and attempted to civilise and educate him. The records which he kept on the educational progress of Victor were complied into the book, *The Wild Boy of Aveyron*, which has become a classic in the annals of education for the retarded. Although Itard felt that he had failed with Victor, the French Academy of Science viewed his work as successful in that Victor had become more civilised and more educated. One of Itard's students, Edward Seguin, continued working with the retarded and established a school for intellectual retardates in Paris in 1837. In 1848, Seguin emigrated to the United States where he helped establish a number of institutions and programs such as a day training school for the mentally retarded in New York City. Seguin later became superintendent of the Pennsylvania Training School for Idiots and was selected as the first president of a professional organisation, now known as the American Association of Mental Deficiency (Cegelka and Prehm, 1982; Gearheart, 1980; Gearheart and Weishahn, 1976; Hewett and Forness, 1984; Love, 1973).

These investigations of ways to "cure" or "remediate" the handicapped carried with them the hope of possible full reintegration of the disabled back into the community as useful members of society. In order to rehabilitate the handicapped, numerous residential institutions were developed throughout Europe and the United States during the nineteenth century. The period of the 1800's became known as the era of institutions. Institutions for the blind, deaf and mentally retarded were in operation in France, England, Scotland, Germany, Italy and the United States. Johann Jacob Guggenbuhl, a Swiss physician interested in cretinism, has be credited with the popularisation of the institutional concept. In the late 1830's Guggenbuhl established Abendburg Institution for cretins. Abendburg became internationally known, and it was a model for numerous institutions in Europe and the United States (Kanner, 1964). In the United States, the Asylum for the Deaf was established at West Hartford, Connecticut, in 1817. In 1831, Perkins School for the Blind in Watertown, Massachusetts, was founded by Samuel Gridley Howe, a Boston physician who had worked with Edward Seguin. In 1851, Dr. H.B. Wilbur founded the State Asylum for Idiots in New York. The Institution for Feebleminded Youth in Ohio was opened in 1857, and the School for Imbeciles began operation in Connecticut in 1858 (Gearheart and Litton, 1975). While the founders of these institutions were optimistic that the handicapped could be rehabilitated, or "cured," their expectations were met with failure, especially with the mentally retarded. Public confidence in the institutions began to decrease, and institutions began to lose their prestige (Love, 1973). By the close of the nineteenth century, however, hopes for normalisation of many of the handicapped waned. Residential schools, which had been seen as training institutions, were replaced by custodial facilities for handicapped children who were perceived as needing lifelong care and dependency.

The eugenics movement in the late 1800's and early 1900's also influenced societal attitudes toward institutions for the handicapped. During this period, the institution was viewed as a means of protecting society from the handicapped rather than protecting the handicapped from society. Reports from Dugdale in 1875 on *The Juke's: A Study in Crime, Pauperism, Disease and Heredity* and from Henry Goddard in 1912 on *The Kallikak Family: A Study in the Heredity of Feeble-Mindedness* frightened society into believing that mental retardation was inherited. W.B. Pitkin (1928), in his book, *Twilight of the American Mind*, stated that some preventative measures needed to be taken to stop this genetic transmission which would weaken the race. A similar line of thinking was developed in 1940 in Nazi Germany where mental defectives and handicapped who might contaminate the race were put to death (MacMillan, 1982).

In the 1920's and 1930's, societal attitudes toward the handicapped shifted again as the nation dealt with its feelings about the handicapped soldiers returning from World War I. The Great Depression which followed also forced the American society into a position where many of the "normal" population experienced being needy. This impoverished status seemed to make society become more empathetic toward the needs of the less fortunate, including the handicapped. Until the 1950's, the United States seemed to be in a period of "guarded enlightenment" where the alarmist climate was fading and people were again trying to understand more about the handicapped (Patton, Payne and Beirne-Smith, 1986). The era of the 1950's and 60's became one of legislation and popular concern for the retarded. Presidential support for assisting the handicapped and disabled came from President Dwight Eisenhower in 1954, from President John F. Kennedy in the early 1960's and from President Lyndon B. Johnson in the late 1960's (Gearheart and Litton, 1979). The following speech by President Kennedy addressed the need for public sentiment to change in the 1960's:

> The manner in which our Nation cares for its citizens and conserves its manpower resources is more than an index to its concern for the unfortunate. It is a key to its future. Both wisdom and humanity dictate a deep interest in the physically handicapped, the mentally ill, and the mentally retarded (President's Committee on Mental Retardation, 1962).

The 1970's and 1980's found the American public endorsing concepts like mainstreaming and normalisation of the handicapped. Presently, the American society seems to be exhibiting attitudes of compassion and care for the handicapped as well as a willingness to reintegrate them into the community. There appears to be a progression toward societal recognition that the individual with a handicap is a person of worth and dignity who should share the same rights as the nonhandicapped in the mainstream of society.

This historical overview of societal attitude toward the handicapped recounts a pendulum swing from inclusion to exclusion dependent on the forces dominant in the society during any given era. The mainstream momentum which evolved from this historical pendulum swing presently finds a society willing to include the handicapped.

Civil Rights Movement and the Handicapped

> We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable Rights, that among these are Life, Liberty and the pursuit of Happiness (*Declaration of Independence*, 1776).

From its inception, the United States government has extolled the virtues of human rights for all people. In order to preserve these civil rights, the American government has enacted national legislation to safeguard these cherished liberties. The constitution of the United States, considered the Law of the Land, reaffirmed the national belief in human rights and offered protection of these rights under the Fourteenth Amendment.

> No State shall abridge the privileges of immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws (Amendment XIV, *The Constitution of the United States*, July 28, 1968).

Thus, it would appear that all citizens of the United States had been equally guaranteed these constitutional rights. While declarations of belief and constitutional laws may offer guarantees in written form, the practices emanating from these tenets are the true indicators of equal opportunity. American history provides examples of practices which endorse equal rights for the majority but often discriminate against the minority. Among the minority groups which experienced discrimination were those who differed from the majority in race, ethnicity, sex, age and handicap. Reactions to these discriminatory practices against minority groups provided the impetus for the civil rights movement in the United States during the 1950's, 1960's and 1970's.

The civil rights movement might be described as an advocacy movement for minorities seeking to reconfirm their constitutional rights. At the heart of this movement, characterised by public speeches, demonstrations and marches, was a challenge for the courts and legislatures to establish or re-establish and protect the rights of all people including the minorities. Outcomes of the civil rights movement included federal legislative acts and executive orders which offered some of the following remedies to discriminatory practices (Clelland, 1978).

- The Equal Pay Act of 1963 provided for equal pay for men and women performing similar work.
- The Civil Rights Act of 1964 prohibited any discrimination based on race, colour or national origins.
- Executive Order 11246, issued by President Johnson, required affirmative action programs for minorities and females.
- The Age Discrimination in Employment Act of 1967 prohibited discriminatory employment practices against persons aged 40 to 65.
- Title IX of the Education Amendments of 1972 prohibited discrimination on the basis of sex against employees or students in educational institutions.
- The Vietnam Era Veteran's Readjustment Assistance Act of 1974 prohibited discriminatory employment practices against disabled veterans and instituted affirmative actions programs for governing employment practices relative to these veterans.

Most of the minority groups achieved some degree of success in restoration of their civil rights by the early 1970's.

The Civil Rights Act of 1964 offered protection of civil rights to most minority groups, but it overlooked the handicapped. There were numerous attempts to amend the Civil Rights Act by extending coverage to the handicapped, but these proposed amendments never were approved by the United States Congress (Sheppard, 1978). Certainly the handicapped were a minority, and certainly they had been discriminated against unfairly and injustly.

The denial of rights for the handicapped might be viewed as an abridgement of their guaranteed constitutional rights. Drew, Hardman and Bluhm (1977) posed the following scenarios depicting this task of equal protection for the mentally retarded under the Constitutional law.

> The right to be human based on the principles of equality is applicable to all individuals. However, this democratic principle is too often violated in relation to the mentally retarded citizen. . . . concerned individuals are advocating the "establishment" of basic human rights, when in reality the rights of the handicapped should be no different than those of the nonretarded citizens. Consequently, the issue confronting society is not the establishment of basic human rights, but the enforcement of the rights guaranteed every individual (p. 101).

Why were the handicapped still being denied equal protection of their constitutional rights? Reginald Jones (1978) offered the following supposition.

> It is apparent that handicapped persons are an undervalued minority group. They have been segregated in schools and isolated in communities. Their accomplishments and potential have been minimized and their limitations highlighted. They are victims of negative stereotyping. . . . It has been speculated that these attitudes are linked by an hypothesized aversion to groups perceived as weak and powerless. If so, it is highly probable that powerful negative attitudes, in latent form at least, are held towards the handicapped. As with certain racial miniority groups, through vaious segregationist practices we have accommodated society's attitudes by excluding handicapped persons from full participation in American life (pp. 67-68).

Regardless of any societal reason for withholding full civil rights from the handicapped, it did not halt the endeavours of advocate groups in seeking legal resolution to this inequitable treatment. In the late 1960's and early 1970's, there was a proliferation of litigation lodged in the courts on behalf of equal rights, equal treatment and equal education of the handicapped. The outcome of this massive litigation movement resulted in the passage of two major pieces of legislation which would serve as the Civil Rights laws for the handicapped. Public Law 93-112, the Rehabilitation Act of 1973, contained a section (504) which became heralded as the Civil Rights Act for the handicapped. Section 504 of the Rehabilitation Act offered the following protection for the handicapped.

> . . . no otherwise qualified handicapped individual in the United States shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance (Public Law 93-112: Section 504 of the Rehabilitation Act of 1973).

Two years after the passage of Public Law 93-112, Public Law 94-142, the Education for All Handicapped Children Act of 1975 was passed.

This act provided further safeguards to protect the rights of handicapped children. The law was designed to assure the following:

> . . . all handicapped children have available to them . . . a free appropriate public education which emphasizes special education and related services designed to meet their unique needs, to assure that the rights of handicapped children and their parents or guardians are protected, to assist states and localities to provide for the education of all handicapped children, and to assess and assure the effectiveness of efforts to educate handicapped children (Public Law 94-142: Education for All Handicapped Children Act of 1975).

With the passage of the Rehabilitation Act of 1973 and the Education for All Handicapped Children Act of 1975, the handicapped were finally recognised by the federal government as bonafide citizens with basic human rights which are guaranteed to every individual. After a history of being excluded as recognised American citizens with full civil rights, the handicapped were now included under the Declaration of Independence guarantee that ". . . *all* men are created equally, that they are endowed with certain inalienable Rights, that among these are Life, Liberty, and the pursuit of Happiness" (*Declaration of Independence*, 1776).

Advocacy Movements and the Handicapped

> We therefore declare . . . that physically handicapped people . . . ought to be free and independent, and . . . have the power to live as independent and full human beings. We who subscribe to this declaration shall do all things in our power to secure these rights . . . (Westie, 1976, p. 169).

The previous citation, taken from "A Bicentennial Declaration of Human Rights for Handicapped Persons," (Westie, 1976) echoes the sentiments of advocacy movements on behalf of the handicapped. Advocacy for the handicapped has been described as "an independent movement of consumers (e.g., parents, people with disabilities, and children) and their allies to monitor and change human service agencies" (Biklen, 1976, p. 309). The primary goal of advocacy is to ensure that the rights of a particular individual or group are protected (Davis, 1980). Advocacy for the handicapped may be undertaken by corporate groups, lawyers, parents, educators, handicapped people, or concerned citizen volunteers.

Although examples of citizen advocacy have existed for numerous years in America, it was only recently developed as a formal type of advocacy. Dr. Wolfe Wolfensberger (1973) defined citizen advocacy as ". . . a mature, competent citizen volunteer representing, as if they were his own, the interests of another citizen who is impaired in his instrumental competency or who has major expressive needs that are unmet and that are likely to remain unmet without special intervention." Examples of citizen advocates for the handicapped included Edward

Sequin, Samuel Howe, Dorothea Dix, Franklin Delano Roosevelt and John F. Kennedy. In 1843, Dorothea Dix, who had sought improved treatment for America's institutionalised people, described her role as an advocate in the following speech to the Massachusetts Legislature:

> I come to present the strong claims of suffering humanity . . . I come as the advocate of the helpless, forgotten, insane, and idiotic men and women; of beings sunk to a condition from which the most unconcerned would start with real horror . . . (Dix, 1843).

President John F. Kennedy could also have been considered a citizen advocate for the handicapped. In 1961, he committed the country's resources to the cause of handicapped individuals and advocated for an intensive search for solutions to the problems of the mentally retarded (Hewett and Forness, 1984).

In addition to individual citizen advocacy, collective advocacy has also been effective in promoting and securing the rights of handicapped individuals. Collective advocacy came about through parent and professional organisations seeking to ensure constitutional rights and services for the handicapped. Newman (1983) credited these collective groups with being the leading advocates for the initiation, improvement and extension of services for the handicapped. Initial collective advocacy in the 1920's and 1930's dealt more with concerns over the health and welfare of the handicapped. The American Association on Mental Deficiency, organised in 1876 under the name of the Association of Medical Officers of American Institutions for Idiots and Feebleminded Persons, spent its first 25 years of operation dealing with concerns over the care and treatment of institutionalised handicapped persons (Gearheart and Litton, 1979). The National Society for Crippled Children, founded in 1921 by a group of parents, advocated for the care and treatment of the physically handicapped (Gearheart, 1980). In 1949 the United Cerebral Palsy Associations incorporated to advocate for research and services on behalf of the handicapped afflicted with cerebral palsy (Gearheart and Litton, 1979).

In the later part of the 1940's and the 1950's, some of the collective advocacy groups added to their list of campaign objectives, the quest for appropriate educational services for the handicapped. Groups such as the National Associations for Retarded Citizens (organised in 1922) began advocating for the provision of educational programs to meet the needs of the handicapped. In 1960, the Association for Children with Learning Disabilities organised and became politically active in securing educational programs for the learning disabled (Gearheart, 1980; Gearheart and Litton, 1979).

In the 1970's, these collective advocacy groups became much more assertive in their quests for appropriate rights and services for the handicapped. As Cegelka and Prehm (1982) put it, "advocates stopped pleading for services . . . and began to insist on their human and legal rights." It was also around this time period that numerous organisations paused in their quest for services on behalf of specific handicapped individuals and joined forces to engage in efforts for the rights of all handicapped individuals. This coalition movement advocated their position on the rights of the handicapped in the political arena, in the court systems and to society at large. The result of this coalition of advocacy groups was a powerful alliance which would pave the way for the passage of Public Law 94-142, The Education for All Handicapped Children Act of 1975.

They came, they advocated, they conquered. Without this strong advocacy movement, it is doubtful that the handicapped would **have** been accorded their rights to be included in the mainstream.

Judicial Practices and Education of the Handicapped

> The courtroom is the place where an American citizen is expected to win and insure such inalienable rights as are his (Perske, 1973, p. 61).

As a result of the civil rights movements in the 1950's and 1960's, the American public became increasingly aware of alleged discrimination in housing, employment, public access and public education. These discrimination charges were frequently brought to the court systems in the form of litigation. The court rulings on these litigation matters provided a basis upon which future litigative decisions could be made. Oftentimes, litigation outcomes led to the formulation of legislative acts at the local, state and national levels. One of the most famous litigation cases of the 1950's was the case of Brown v. the Board of Education of Topeka, Kansas (1954), in which the United States Supreme Court ruled that education was a right not a privilege. In this case, where black students were forced to receive their education in separate segregated educational facilities, the court ruled that the exclusion of some children from schools attended by the majority deprived those children of an equal opportunity. The Supreme Court stated:

> In these days, it's doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity . . . is a right which must be made available to all on equal terms (Brown v. Board of Education, 1954).

While the litigation outcome of the Brown case applied specifically to racial desegregation in schools, it had definite implications for education of the handicapped. In 1971, the Pennsylvania Association for Retarded Citizens (PARC) filed a class action suit against the Commonwealth of Pennsylvania charging that mentally retarded children in Pennsylvania were being denied their right to a free public education because of their intellectual deficiency. A court approved consent agreement was issued, and the court mandated that the state of Pennsylvania provide a free appropriate public education to all retarded children, aged six to 21 (Hardman, Drew and Egan, 1984). In 1972, in another litigation case on behalf of the handicapped (Mills vs. Board of Education of the District of Columbia, 1972), the court ruled that all handicapped children had a right to a free public education regardless of the severity of the handicap and regardless of the financial resources available in a school system. Judge Waddy, who presided over this case, offered the following commentary:

> The District of Columbia's interest in educating the excluded children clearly must outweigh its interest in preserving its financial resources. If sufficient funds are not available to finance all of the services and programs that are needed and desirable in the system, then the available funds must be expended equitably in such a manner that no child is entirely excluded from a publicly supported education consistent with his needs and ability to benefit therefrom. The inadequacies of the District of Columbia public school system whether occasioned by insufficient funding or administrative inefficiency, certainly can not be permitted to bear more heavily on the "exceptional" or handicapped child than on the normal child (Mills v. Board of Education, 1972).

While the PARC case and the Mills case were filed in the courts because handicapped children had been excluded from a free public education, there were other pieces of litigation emanating from situations where children had been wrongfully placed in special education classes. In the case of Diana v. Board of Education, a class action suit was filed on the disputed placement of Mexican-American bilingual children in classes for the mentally retarded. The court stipulated that these children had been wrongfully placed in special education on the basis of results from tests which were not in their primary language. In the case of Larry P. vs. Riles, a class action suit was filed on behalf of all black children in classes for the educable mentally retarded in San Francisco. The court ruled that I.Q. tests which are culturally bounded were discriminatory toward black children. These test results were banned as a criterion for removal from regular classrooms to special education classes (Hargrove et al., 1983). Thus, the litigation attempts were contradictory in nature. On the one hand, there was a demand for greater access to special education services, and on the other hand, there was a demand for greater caution in placing children in special classes.

There were numerous other pieces of litigation cases brought about in the 1970's relative to educational services for the handicapped. There were also important pieces of legislation enacted affecting the rights of the handicapped. Section 504 of the Rehabilitation Act of 1973, which has already been cited, prohibited discrimination of individuals because of their handicap. While other legislative acts may have led to the passage of Public Law 94-142, The Education for All Handicapped Children Act of 1975 has been hailed as landmark legislation governing the educational practices for handicapped children. This act calls for the following provisions:

- All handicapped children (ages three to 21 years) are entitled to a free public education appropriate to their needs and abilities.

- There shall be no cost to the family, even if the child has to be sent to a nonpublic school to obtain an appropriate education.
- Each child to whom the Act applies must be evaluated in nondiscriminatory ways (by use of child's native or dominant language, valid tests, and knowledgeable examiners).
- Each child is to have a written Individualized Education Program (IEP) designed specifically for that child, with periodic evaluations and revision of the IEP.
- Education is to be provided in the least restrictive environment appropriate to the child's needs and abilities.
- Due process procedures are to be followed, meaning that parents have a right to all information regarding their child, to legal council if they feel it necessary, and to impartial hearings and appeals if they disagree with the plans for their child (Schwartz, 1984, pp. 6-7).

Public Law 94-142 has been heralded as the culmination of all the civil rights movements, advocacy movements and litigative and legislative efforts to secure educational rights for the handicapped. Through the provisions of this act, all handicapped children now have the opportunity to be included in the mainstream of education.

Educational Practices and the Handicapped

According to Sarason and Doris (1979), Public Law 94-142 might be construed as criticism of what our schools have been. The manner in which schools have dealt with education for the handicapped can be placed on a parallel with societal attitudes toward the handicapped. The same question that has plagued society about the handicapped has also plagued the schools. Should handicapped be included or excluded from the mainstream?

In order to understand educational practices for the handicapped, it is essential to understand American educational practices in general. Throughout American history, the schools have served a number of functions. In colonial America, schools served as caretakers for parents who were struggling to survive. The school also served as guardians of the early settlers' religious beliefs. After the American Revolution near the end of the 18th century, the schools became a political necessity to ensure the liberty and safety of the public. Thomas Jefferson spoke of the need for the citizens themselves to improve their intellectual efforts if the country was to maintain its strengths and security. In the 1820's and 1830's, America saw the rise of the common school which espoused equal educational opportunities with equal educational results. This common school movement was an attempt to cure the ills of society by providing the same lockstep graduated learning through the introduction of grades. Following the common school movement, state compulsory attendance laws were enacted in the late 1800's and early 1900's to preserve and perpetuate the society as well as to foster the welfare of the individual child who might be exploited through child labour practices. In the early 1900's following the United States Civil War, schools shifted to provide training for employment for meeting the needs of the Industrial Revolution (Abramson, 1980). With the rise of the Industrial Revolution numerous skilled European immigrants came to work and live in America. The common school was used to teach the ethics of the American way to these immigrant children. Although the expectation that the common school movement would act as an equaliser for all individuals has proven to be a myth, Americans still view this free, universal, quality education as a benchmark of American freedom (Okun, 1981). Thus, the American society has looked to its schools to accommodate the needs of the society and cure its ills.

Prior to the 1800's, most handicapped individuals in America were stored in poorhouses or charitable institutions or kept at home without any educational provisions. As late as 1850, sixty percent of the inmates of poorhouses were comprised of the deaf, blind, insane and mentally retarded (National Advisory Committee on the Handicapped, 1976). From the early 1800's to the time of the Civil War, a number of residential schools were established for the deaf, blind and mentally retarded (Kirk and Gallagher, 1983). While these residential schools provided education for numerous handicapped individuals, the institutions for many of the mentally retarded became a place of residence and custodial care until death. In the early 1900's, some institutions provided colonies or farms for the mentally retarded where the residents could remain productive (Cegelka and Prehm, 1982).

In the late 1800's and early 1900's, prompted by the enactment of compulsory education laws for all children, special day classes and public school classes for the handicapped were introduced. State residential schools for the blind and the deaf were still in operation as were institutions for the more severely retarded. Gearheart and Weishahn (1976) assume that most school districts first attempted to educate the mildly retarded. This may be due to the difficulty experienced by these students in keeping up with the common school practice of teaching and learning a specified amount of material during a specified class or grade. Many of these students were retained in the same class in hopes that they would catch up and progress at the same rate as the next younger grade. After the 1920's, as these mildly retarded students failed to "meet the grade," a number of special classes for these "slow learners" or "educable mentally retarded" students were developed in the public schools. At the same time, these special classes were met with favourable reactions as problem students were excluded from the regular classroom.

> Feebleminded school children are present everywhere. They linger in the third, fourth, fifth, and sixth grades until well into adolescent years. They consume a disproportionate amount of the teacher's time, they drag down the standards of achievement for normal children, they tend to become incorrigible and to feed the never-ending stream of juvenile court cases . . . Not until

> the institutional cases have been removed from the public schools, and not until the borderline cases have been placed in special classes, can the work of school with normal children proceed as it ought. Feebleminded children in the regular classes not only interfere with instruction, they are also likely to be a source of moral contagion (Terman, 1917, p. 164).

Some of the mildly retarded were in special classes for part of the day while others were in self contained special classes for the full day. These special classes for the mildly retarded, with some modification, remain in operation until the present day. From the 1920's to present day, the public schools offer some full or part time special classes for the visually impaired, the speech impaired and the hearing impaired.

Prior to the 1940's, parents with "trainable mentally retarded" children, whose intelligence quotients were below 50 to 55, had the choice of keeping their child at home or placing the child in a private or public residential facility. Many parents chose neither option and formed their own parent sponsored programs for their children. Through the efforts of the National Association for Retarded Children, school systems began offering educational services to this population. As late as the mid 1970's, some states were still not providing special education programs for the moderately retarded. Today's schools are providing special education programs for the moderately retarded through special classes in the public schools and in special schools (Gearheart, 1980).

Special education programs for children with learning disabilities in the United States are relatively new because this exceptionality has only been recognised since the early 1960's. It should be noted that prior to the recognition of learning disabilities as a handicapping condition, many students who would now be diagnosed as learning disabled, were receiving special education classes for students diagnosed as hyperactive, minimal brain dysfunctional, neurologically impaired, dyslexic, aphasic, or brain injured. In 1965, there were two states providing special education for the learning disabled. By 1975, special education classes for the learning disabled were offered in all fifty states (Gearheart, 1980).

While a strong movement to secure special education services for the handicapped was underway in the 1960's and 1970's, there was also a movement to do away with special education classes and return children to regular classes. Educational leaders were questioning the intent and value of segregated special classes for the handicapped. Dunn (1968) indicated that

> a better education than special class placement is needed for socioculturally deprived children with mild learning problems and who have been labeled educable mentally retarded.

Gallagher (1972) noted that "special education too often was an exclusionary process masquerading as a remedial process." The President's Committee on Mental Retardation (1970) published a report called

The Six-Hour Retarded Child citing examples of mildly retarded students who were not considered retarded before or after school hours, but during the six hours they spent in school, they were. The value and intent of special education classes, especially for the mentally retarded, was called into question.

Present day education for handicapped children is framed by the tenets of the Education Act for All Handicapped Children of 1975. Handicapped children are being provided with free public appropriate education in the least restrictive environment. The least restrictive environment is that one in which the handicapped children are provided with educational services under the least confining and most normalised and integrated circumstances consistent with their needs. By implication, the least restrictive environment shows a preference for integrated rather than segregated special schools or classes. By implication, the least restrictive environment shows a preference for mainstreaming (Patton, Payne, Beirne-Smith, 1986).

The Mainstreaming Momentum

The passage of the Education Act for All Handicapped Children Act of 1975 has been credited with ending the quiet revolution for seeking equal educational rights for the handicapped. Since the term 'revolution' connotes a complete or radical change, it may be more appropriate to refer to this quest for rights of the handicapped as an evolution. This evolution can be historically traced to a combination of societal circumstances including attitudes toward the handicapped, civil rights issues, advocacy movements, judicial practices and educational practices. While this legislation may be the long awaited victory, it is essential that advocates for the handicapped do not fall into a false sense of security in thinking that the pursuit is over. As Sarason (1971) states

> One could write a fascinating but discouraging history of man illustrating the point that the possession of "truth," or power, or a mandate for change, or the pursuit of justice is far from enough for achieving intended puposes . . . (p. 8).

From the time this act was signed into law in 1975 by President Gerald Ford, there were serious questions about the realistic expectations concerning the legislation. The President expressed the following concerns:

> Unfortunately, this bill (PL 94-142) promises more than the Federal government can deliver and its good intentions could be thwarted by the many unwise provisions it contains. Everyone can agree with the objective stated in the title of this bill--educating all handicapped children in our nation. The key question is whether the bill will really accomplish that objective (*Weekly Compilation of Presidential Documents*, 1975, p. 1335).

One decade later, President Ford's question about the reality of keeping the promises made in PL 94-142 have yet to be answered.

The major proponents, in their emotional outpouring for the victory celebration, seemed to lose sight of the promises made and the practical problems facing the implementation of the law. These included attitudinal opposition by regular and special educators, the development of compliance regulations for each state, procedures for parent involvement and the impact on handicapped and nonhandicapped students (Freeman, Gavron and Williams, 1981). These problems are still being addressed today.

Can we deliver equal education to the handicapped? Is mainstreaming an effective method of education? Do we have the resources to support a free appropriate public education for all children? It would appear that more time is needed to answer these questions. Perhaps as Sarason and Doris (1979) note, these may really not be the most germane questions:

> At its roots, mainstreaming is a moral issue. It raises age-old questions: How do we want to live with each other? On what basis should we give priority to one value over another? How far does the majority want to go in accommodating the needs of the minority? The emergence of mainstreaming as an issue raises but does not directly confront these questions. To the extent that we put discussion of mainstreaming in the content of education and schools, we are likely to find ourselves mired in controversies centering around law, procedures, administration, and funding. These are legitimate controversies because they deal with practical, day-to-day matters that affect the lives of everyone. But the level of difficulty we encounter in dealing with these matters will ultimately be determined by the charity with which the moral issue is formulated (p. 392).

How do we want to live together?

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COMPETENCE AS AN AIM OF EDUCATION

Wolfgang Brezinka
University of Constance
Constance, Federal Republic of Germany

ABSTRACT

Competence (in German: Tüchtigkeit) *is an ideal of personality with a long history. In ancient Greece it was known as* **areté**. *In ancient Rome it was called* virtus. *In Germany since 1919 it was included as an aim of education in several constitutional laws. In the Youth Welfare Law (*Gesetz für Jugendwohlfahrt*) it appears as follows: "Every German child has a right to education with the aim of physical, mental, and social competence" (*"Jedes deutsche Kind hat ein Recht auf Erziehung zur leiblichen, seelischen und gesellschaftlichen Tüchtigkeit"*) (Jugendrecht, 1985). Although competence is one of the world's oldest educational aims, it is no longer self evident. Because of its general nature, it has become vulnerable to the suspicion of representing merely an empty prescription. It appears problematic to some people because it tends to suggest ideas of requirements, achievement, competition and compulsion to conform. Can we still use competence as an educational aim? What can it contribute to ideological and moral orientation? What are its implications for the educology of moral education? What would change if we were to give it up? In order to answer these questions we must clarify the meaning of the concept of competence, analyse the anthropological convictions underlying the ideal of competence and evaluate competence as an educational aim within the context of these clarifications and analyses.*

The Concept of Competence

The term 'competence' means a relatively permanent quality of personality which is valued positively by the community to which the person belongs. It is the ability of an individual to meet specific demands which are placed upon her or him to the fullest extent. This ability is acquired as the result of personal effort.

The quality of competence is attributed to a person who shows her or himself *to be up to those tasks which life presents to her or him*. The locution 'to be competent' means *to be able to do what is required.* Competence is always related to something which must be completed, performed or achieved. Such demands and tasks either grow out of specific situations or they are placed on the person by some external agent or the person imposes them on her or himself.

Competence is always connected to requirements. There is no competence without a specification as to the area in which somebody is or should become competent. We can speak of competence meaningfully only in connection with requirements. But requirements do not exist in general; they are always specific requirements. Competence is always related to specific requirements, and its content is determined by them. For this reason it is impossible to attribute to a person competence as such, without reference to particular tasks or kinds of tasks.

A person is competent by being able to perform a certain kind of task. If a person possesses the disposition for certain kinds of achievement then she or he is described as competent in relation to this task: "competent to work," "professionally competent," "a competent sportsman," "morally competent" and so forth. There are as many kinds of competence as there are requirements and corresponding dispositions.

It is essential to the concept of competence that this disposition is acquired as the result of *individual effort*. Competence is no inborn quality. It does not develop by itself, neither through maturation nor solely by incidental learning. Rather, it requires intentional learning. Every form of competence is within the power of the individual, and its acquisition is voluntary (Aristotle, 1956: III, 7, 8; pp. 53, 57). It is a quality acquired by action in the form of repeated exercise. It is unattainable without specific intention, readiness for effort and expedient action. Only through persistent effort can an individual learn to carry out an activity so well that it deserves the name of 'competence'.

In every sphere of human activity competence is the result of practice: with verbal, manual, scientific, sporting or musical ability, as well as with moral virtues. In every case, as Aristotle writes,

> it is by similar activities that habits are developed in men; and in view of this, the activities in which men are engaged should be of [the right] quality, for the kinds of habits which develop follow the corresponding differences in those activities. So in acquiring a habit it makes no small difference whether we are acting in one way or in the contrary way right from our early youth; it makes a great difference, or rather all the difference. (Aristotle, 1975: B; p. 22)

The individual is thus just as responsible for the "merits of his character" as for the "forms of his inferiority." For better or for worse we are "co-producers of our basic attitudes" by either repeated similar actions or repeated similar omissions (Aristotle, 1956: III, 7; p. 57).

Finally a remark concerning the characteristic of "requirements must be met to the fullest extent" is needed to clarify this distinguishing characteristic of competence. This means the same thing as satisfying them well. This excludes qualities which are "just sufficient," which lie just above the border of inability. On the other hand it leaves the concept of competence open for all degrees up to outstanding quality.

The standard that is to be used in each case is the specific requirement. It does not have to be the same for all the members of a group, but rather, can be reset for people who are handicapped in order to take the limits of their ability into account as well. Competence can thus be defined according to the degree of achievement which can be reasonably be expected from each individual.

In conclusion, and given the foregoing qualifications, the term 'competence' means a relatively permanent personal quality which satisfies certain specific requirements to the fullest extent. Competence is acquired through individual effort, and it is positively valued by the community.

Anthropological Foundations of the Ideal of Competence

In order to evaluate what the ideal of competence can contribute to ideological and moral orientation, we must consider the anthropological fundaments it is based upon. Only if these assumptions are empirically well founded does it make sense to expect some help from this ideal for education. There are at least three main assumptions which can be distinguished.

One of them is that *every human being by nature depends on being formed by society and culture as well as by her or himself*. The implications of this assumption include the following. Human kind is born with a mental constitution which is open, plastic and determinable by experience. Human beings are extremely capable of learning and in need of learning. Nature does not provide them with their personalities as finished products; rather, the personality forms itself gradually as a result of its own actions and experiences in life. Between birth and the end of adolescence the individual is forced to acquire a certain state of personality which enables one to live life well according to the specific conditions of one's society and its culture (cf. Brezinka, 1971, p. 45 and 1981a, p. 42). One's character and to a certain degree even one's body are under a "compulsion to learn" (Rössner, 1971; cf. Brezinka, 1981, pp. 179-180) or a "compulsion to be formed" (Gehlen, 1950, p. 63). Once one has achieved adulthood one is not only a "work of nature" but also a "work of society" and "a work of one's own doing" (Pestalozzi, 1946, p. 192). Expressed differently, "One becomes good and virtuous through three things, namely predisposition, habit, and insight" (Aristotle, 1973: Politik VII, p. 239; 1956: Nik. Eth., X, 10, p. 236).

There is no comprehensive name for the influencing factors which must supplement the inborn qualities of one's organism before an individual becomes competent for life (in German, *lebenstüchtig*). Since Plato and Aristotle, however, three kinds of influences have been emphasised as being of special importance: first, the pressure (or compulsion) emerging unvoluntarily from one's fellow human beings and the surrounding order of culture (or the "laws" -- cf. Plato : Krito 51, pp. 49-50; Aristotle, 1956, X, 10, p. 236); secondly, education; and thirdly, conscious self determination through practice and insight. Kant distinguished between "external compulsion" and "free self compulsion" (Kant, 1982, Vol. 8, pp. 508-9, 512).

Another name for this culturally dependent condition of competence is 'discipline'. According to Kant, "the culture of discipline" is necessary for the "creation of a reasoning being's competence in all its forms." It "consists of the liberation of the will from the despotism the desires" (Kant, 1981, Vol. 10, p. 390).

Arnold Gehlen has emphasised even to the point of one sidedness that character is a "product of discipline" which results from the acts of its owner and from the effects of the actions of others upon the owner (Gehlen, 1950, p. 365). He describes the human being as "a being to be disciplined." In human beings,

> the physis is of such a quality that it is necessarily also a *task*. This means that we cannot think of human nature without thinking of qualities of discipline, leadership, responsibility, and values (Gehlen, 1950, p. 401).

"That man [human kind] is a task for himself [and herself]" extends even "to the responsibility for the quality of his [and her] physis" (Gehlen, 1950, p. 373).

This idea that the human being is not only a "co-producer" of her or his mental attitudes but, to a certain degree, of her or his physical assets and defects as well, was already familiar to Aristotle. One who leads a life without discipline becomes sick; one who neglects physical training becomes ugly. Also with regard to the physical appearance "repeated specific acts," or their repeated neglect, bring about "a corresponding state of personality" (Aristotle, 1956, Nik. Eth., III, 7, pp. 55-6).

How this cultivation of one's own personality by action and omission is achieved was described by Nietzsche as follows:

> Our actions form us: in every action certain forces are trained and others not, and thus temporarily neglected. One emotion always reinforces itself at the expense of other emotions whose power it saps. The actions which we carry out most frequently finally incase us: they claim our powers, thus making the execution of other intentions more difficult. In the same way a person is formed by regular omissions: whether he [or she] has exerted self control or self indulgence a few times every day will become obvious. This is the primary consequence of every action: it adds something to us, of course also physically. (Nietzsche, 1978, pp. 240-1, No. 741)

This view of human nature and of the becoming of personality is *opposed* to those ideas which are implied by the concepts of *nativism* and *evolutionism*. These concepts are used here to designate the theory that the personality "develops" or "evolves" from inborn predispositions in which one's qualities are already present. One thinks of this evolution taking place according to the pattern of the maturation of physical organs, a process which follows an inherited plan and which is only slightly under the influence of experience. This view is not borne out by facts, and it has already been refuted many times. There is overwhelming evidence that the personality results out of learning, actions, exercises, experiences, ideas and decisions (cf. Herbart, Vol. 2, p. 185 and Vol. 3, p. 287; Busemann, 1952 and 1956; Allport, 1958, p. 60; Keiter, 1966; Brezinka, 1971, p. 191 and 1981a, p. 40).

A second anthropological fundament upon which the ideal of competence is based is that *the habituation of behaviour in accordance with cultural norms is a prerequisite for coping with life.* The term 'habituation' is used here for the learning process by which repeated experiences and/or actions of the same type give rise to a habit, that is, a relatively permanent mental disposition for a certain type of behaviour. The phrase, 'in accordance with cultural norms', means a type of behaviour which conforms to socio-cultural norms and which is, for this reason, valued positively by the community. These norms are not limited to moral and legal norms, but they also include language norms, hygienic, economic, technical, scholarly, aesthetic, religious, professional, athletic and other norms. On the side of the adult members of the community certain forms of knowledge, convictions and abilities correspond to these norms, enabling them to act according to them. These different convictions, attitudes, skills and virtues can be summarised by the concept of the "*good habit*" (cf. Willmann, 1908, p. 97; Mausbach, 1920, p. 84).

Only by habituation of behaviour in accordance with cultural norms can the plastic constitution of a newborn child gradually be transformed into a competent personality. The whole of the qualities acquired by habituation has been called since antiquity "the *second nature*" of human kind (Aristotle, 1956, Nik. Eth., VII, 11, p. 161; Hegel, 1970, p. 301; Gehlen, 1950, pp. 376-377; on virtue as "second nature" cf. Cathrein, 1924, Vol. 2, p. 345). Due to natural plasticity, openness and ability to learn, human kind "depends on a second nature . . . in order to be able to live with his [and her] first nature" (Hofstätter, 1958, p. 117). In other words, human kind must master ways of thinking and doing to such a degree that they are carried out smoothly and without conscious thought, as if they were "natural" processes of "their own accord."

Examples of this include the mastery of one's mother tongue, all kinds of social abilities and working skills. The mastery of knowledge is of the same kind: habituated knowledge "is knowledge which can be put to use instantly in every concrete practical situation, knowledge which has become "second nature" and which can be adapted to the task at hand, to the demand of the moment (Scheler, 1954, p. 36). This is equally true of attitudes and convictions: they "guide the course of our experience with great precision in such a way that one can almost speak of a "reflexive control of thought."

> This automatism constitutes the enormous biological importance of attitudes: in problem situations they present themselves to consciousness immediately, as decisions which have already been finished in a way that places them beyond all doubt, thus eliminating the need for the machinery of decision making to be activated; they make possible the solution of problems which would otherwise have to be submitted to time-consuming consideration if the attitude did not exist. [For this reason attitudes and convictions are] first-rate tools for managing problematic situations. [They are the] stabilisers of personality, . . . labour

> effiency aids, . . . sources of security (Rohracher, 1976, p. 394).

Valuable habits are of course only necessary but not sufficient conditions for successfully coping with life (cf. Brezinka, 1978, pp. 152-3). Another misunderstanding must also be avoided. When emphasising the indispensability of habituated ideas and actions we do not mean to play down the importance of intellectual alertness, the critical use of reason and adaptability to new situations. To the contrary: both, the role of reason as the most important human power, and of prudence as the most important virtue (indeed, the basis of all other virtues -- cf. J. Pieper, 1940; Mausbach, 1920, p. 93; Cathrein, 1924, Vol. 2, p. 353; Steinbochel, 1938, Vol. 2, pp. 126-127) are essential to the adherents of the ideal of competence. It is not reason which is devaluated here, but *intellectualism* (or rationalism), that is, the unrealistic overvaluation of thinking as the *only* means of controlling the personality.

A third anthropological fundament which is necessary for a sound basis for the ideal of competence is that *the acquisition and maintenance of moral competence are dependent upon a relatively lasting social order.* Upon one's entry into the world, every individual finds a particular social order with a particular way of life (cf. Ihering, 1904, Vol. II, p. 139; Vierkandt, 1949, p. 87). Laws, morals and customs are its most important components. Allegiance to the demands which they make is expected of all members of the group. The inclination to believe in valid norms and to orient oneself according to them is acquired through early familiarisation with their demands. If children and adolescents are to identify themselves with these norms it is necessary that the grown-ups believe in and habitually act according to them. This is only possible when the group's social order is relatively permanent and when its members adhere to it without reservation.

This relation has already been emphasised by Aristotle: moral competence depends on a moral order of society which "has the power to assert itself." "In the polis," according to Aristotle, this power is provided by "law and custom" (Aristotle, 1956, Nik. Eth., X, 10, pp. 238-9). But law and customs can bring about the acquisition and maintenance of virtue only if they are relatively durable:

> The law can only assert itself through the force of habit, and this emerges only with time, so that easy transition from existing laws to different new ones leads ultimately to the weakening of the power of law (Aristotle, 1973, Politik, II, 8, p. 89).

In this view, every individual is regarded as part of a trans-individual social system, in *contrast* to *individualism* and *moral subjectivism*. Moral convictions and moral competence are not the products of inborne autonomous impulses. Instead, they arise in reaction to the moral demands and social pressures of the family and the community.

The moral order of society is established before the individual appears, and each member is influenced by it to the very core of her or his mind (cf. Ihering, 1904, Vol. II, p. 80). One's inner stability depends to a large degree on the support from the outside moral order (cf. Brezinka, 1981a, p. 62).

This view implies a belief in the indispensability of *authority* and *tradition* in order to ensure the self-preservation of communities and the moral competence of their members (cf. Stern, 1949; Kolakowski, 1978). This does not exclude an acute awareness of the dangers of the abuse of authority and the petrification of tradition. Strongly tradition-bound communities carry within themselves the threat of "the stultification which is always lurking shadow-like behind stability (Nietzsche, 1976, Vol. 1, p. 583, No. 224). On the other hand, "a society in which revolt against tradition becomes universal . . . damns itself to extinction (Kolakowski, 1978, p. 378).

The Evaluation of Competence as an Aim of Education

How is competence as an aim of education to be evaluated? What can it offer for ideological and moral orientation? How does it emerge in comparison with competing educational aims? Should we give it up or hold on to it? We will begin with the arguments in favour of competence as an educational aim. Then we will consider two competing educational aims often mentioned nowadays. From these analyses and evaluations, we will draw a conclusion and make our recommendations.

Advantages of competence as an aim of education. Let us recall once again the most important characteristics of the concept of competence. The term 'competence' is used here to mean the ability of an individual to meet specific demands to the fullest extent. Competence presupposes that each individual is faced with certain tasks or requirements whose fulfillment is valued positively by the community. Competence can be acquired only by personal effort. Competence can be increased to the level of perfection. It is, however, also possible for handicapped persons to be competent if they meed the demands appropriate to them.

What is the value of competence as an aim of education? *The educational aim of competence is very general, but can be further determined.* The concept of competence is small in content and wide in application. It can be applied flexibly because it is the common denominator of a wide range of personality traits. On the other hand it can be further determined by additional characteristics. The determination is attained by filling the indeterminate (or formal) concept of 'certain requirements' with information regarding the type of requirement actually involved. The educational aim of competence becomes more concrete (or more determined) the more concrete the requirements to be met.

Competence as such, without greater specification of its content, exists only as an abstract concept. In reality competence occurs always in a specific form. The general concept of competence has however the advantage that it can express everything common to all concrete forms of competence, thus facilitating overview and mutual understanding. It is neutral with regard to all social systems and can thus be used by any group to designate group-specific ideals of personality by adding further specifications (cf. Meister, 1965, p. 19).

But also as a general concept, competence contributes to a realistic interpretation of human nature regardless of specific ideological, moral and political convictions. It serves as a reminder that every person is faced with tasks and must strive for perfection in order to become and remain competent. *What* these tasks are, can be concretised by every possible determination of the general concept of competence.

The ideal of competence stresses the importance of socio-cultural demands in the life of human kind, but it is also compatible with their historical relativity. Competence presupposes that human beings are dependent upon communities and their culture, which make demands that must be met as well as possible. It is an ideal which considers human beings as bound to communities, dependent upon cultural norms, and obligated to fulfill communal tasks. It helps to counterbalance the dangers of unbridled egotism.

In addition to that, this ideal is compatible with the relativity of cultures. It does not have the same absolute content for all people, but is instead adaptable to the specific conditions of every community, in particular to its economy, its political order, its religion, its ideology and its morality present at a given time. The ideal of competence can be related equally to requirements faced by entire groups as well as those confronting individual persons.

Competence as an educational aim emphasises the personal activity and responsibility of the educand. Competence is a quality which must be "acquired through personal effort," "through zeal and diligence," as Cicero writes ("*Non natura datam, sed studio et industria partam*," as quoted by Willmann, 1908, p. 98). Wherever competence is an ideal, it is understood that it stems only from personal activity and that it is honourable to strive for it.

This goes hand in hand with the conviction that every person is responsible for her or his own actions and omissions and thus for their effects upon her or his own character. In good and evil, the individual is not only a "work of nature" and a "work of society," but also a "work of [her or] his own doing" (Pestalozzi, 1797). One is not merely a product of chance, but one can and must determine oneself, albeit within certain limits.

Competence as an educational aim favours the striving for perfection. The essential characteristic of competence is "the ability to meet specific demands to the fullest extent." "To the fullest extent" is a standard that does not allow for minimal performances. But it does allow higher degrees of performance up to excellence. It is an ideal that links social approval as well as self-esteem to good performance.

This sets a high level of aspiration which also influences the ideal self-image. A person who recognises the ideal of competence demands much from oneself and becomes dissatisfied with oneself when one fails. Since every kind of ability can be intensified to the level of perfection, the ideal of competence opens wide-ranging goals and thus many possibilities for gratifying activities, happiness with success and the experience of meaning. It is an ideal which favours an active life. It opposes the overestimation of pleasure and places more value in work as the precondition of a happy life. It fits to that image of human kind characterised by Goethe at the end of *Faust*: "Whoever puts himself to strain, he will find salvation" (Goethe: *Faust II*, as interpretation, cf. Korff, 1955, p. 665). For Goethe, competent (in German: *tüchtig*) was his favourite moral concept (cf. Boucke, 1901, p. 9).

Competing aims of education and their deficiencies. The educational aim of competence is no longer approved by all groups of society. Some reject it expressively; others have simply allowed it to be forgotten. It is often difficult to find out whether merely the *word*, 'competence' is being devaluated, or whether the *ideal* of personality represented by the word has lost its credibility.

In the first case, where the *word* is the subject of devaluation, the ideal is retained while the old name for it is neglected or abandoned. This might be so because the word seems worn out or because of negative associations. In such cases, a new, unblemished name is attached to the old concept. The same was true for a time with the word, 'virtue': the word was avoided but the concept was retained and expressed with less problematic words such as 'moral attitude' or 'moral competence'. This phenomenon seems to be repeating itself in the case of the German word, *Tüchtigkeit*: the ideal remains valid, but some people prefer to name it with other words, for instance, with the words, 'competence' and 'qualification'.

In the second case, the situation is more problematic: here it is not just a matter of the renaming of the same ideal. Instead, completely different ideals with other characteristics and other anthropological foundations are set up which stand in opposition to the ideal of competence. An educational aim which poses an absolute *contradiction to competence*, that is, one which excludes all the characteristics of our concept, is extremely hard to conceive. The differences are usually less significant than they seem. They are based partially on misunderstandings created by the ambiguity of the common meaning of the term 'competence' and by unfamiliarity with the explicated concept.

What at first glance appears to be strict rejection frequently turns out to be something quite different when submitted to semantic analysis, namely a relative devaluation of certain types of competence in favour of other personal qualities which, upon closer examination, also are implied by the concept of competence. Only through such analysis can we determine whether concepts proposed as substitutes for competence are really new (that is, a combination of characteristics which have nothing in common with competence) or whether there has simply been a change of names.

Thus we must examine more closely the question of whether those educational aims apparently competing with the aim of competence actually compete with it. As a rule this will only be the case when the educational aim under discussion is based on a different anthropological view than the ideal of competence. As we have seen, there exists above all three conceptions irreconcilable with this idea: (1) nativistic and evolutionistic theories of personality, (2) intellectualism, (3) individualism and moral subjectivism.

The fundamental difference between the use of a different name with the same meaning and the choice of a completely different concept must be considered carefully if we want to interpret correctly the indications for a decline in interest in competence as an aim of education.

Which educational aims are recommended as substitutes for the aim of competence or, more precisely: for the different kinds of competence? The discussion here will be confined only to those two which are propagated most widely at the moment: (1) the freely developed personality; (b) the "ability of moral judgement" on the highest level (Kohlberg and Turiel, 1971, p. 442).

(a) The freely developed personality. All over the world it has been suggested to lay down the "free development of the personality" as the most general aim of education. This trend is based on the United Nations Delaration of Human Rights and on the human rights articles in national consitutions. In the Federal Republic of Germany constitution (*Grundgesetz*), Article 2, Paragraph 1 is relevant:

> Everyone has the right to *the free development of his personality* to the extent that he does not infringe upon the rights of others and does not violate the constitutional order or the moral law (as interpretation, cf. Peters, 1953).

The purpose of this human right is, however, completely different from the purposes of educational aims: this right serves to protect citizens from arbitrary intervention by the state in their personal lives.

The "free development of the personality" is a fundamental human right. But if it is declared as an aim of educaiton it becomes an empty formula without any normative content. Fundamental rights guarantee freedoms; among them the freedom to educate and to be educated. But fundamental rights are not aims of education. One can take the "free development of the personality" as an educational aim only if one has no clear idea of what an educational aim actually is and what purposes it serves.

An aim of education is a norm describing a particular mental disposition (or a network of dispositions) set as an ideal for an educand. The same norm requires the educator to act in a way that enables the educand to realise this ideal to the greatest degree possible (Brezinka, 1981, p. 155). The most important purpose of educational aims is to give educators orientation for educational action. At the same time they serve as standards for the evaluation of educational success (Brezinka, 1981, p. 150).

We can speak of an aim of education only if a specific quality of personality is described as an ideal, that is, as something that should be. That "development of the personality" does not qualify as an educational aim is confirmed by the failure of the term 'development' to designate a specific quality of personality. Instead, this word designates a process eventually resulting in a "fully developed" or relatively complete personality. The naming of such a process contributes absolutely nothing to the definition of an educational aim. It is not part of the definition of educational aims, and in this case, it can only cause confusion.

We can try to avoid such confusion by interpreting the phrase "free development of the personality" as having the following meaning: "the personality which has developed freely" or "the freely developed personality." This is the interpretation which we choose to use in this analysis, and it is the only possible interpretation, if we take seriously the claim that an aim of education is meant. Instead of the process of *development*, this formula emphasises the personality and its qualities.

But this detour does not lead anywhere, because the characteristic "freely developed" is not a quality of personality or a disposition. It only expresses something about the circumstances which are believed to contribute to the coming into being of personality: independent, uncommitted, without being influenced by external agents, the result of the unhindered development of inherited predispositions. This obviously never occurs in reality. But even were this the case, the reference to the *development* of the personality provides no information at all about the *state* of the personality which is recommended as an ideal. Process-oriented concepts such as "development" are completely unsuited for the designation of educational aims, which require product or disposition-oriented concepts (Brezinka, 1981, pp. 52, 112). Thus, the phrase, "freely developed personality," is without any prescriptive content.

Untenable aims like this can only be propagated if the differences between a state of personality and the conditions for its realisation, or between a desired product and the conditions of its production are not understood. Instead of naming the only important characteristics of educational aims -- the desired qualities of personality (or mental dispositions) -- the concept of "free development" emphasises something which has nothing to do with an aim: a vague nativistic or evolutionistic idea of the making of personality connected with equally vague notions of the educator's duty to respect the "freedom" of the educand. Obviously there is no reason to object to this duty or to the educand's freedom -- as long as they are interpreted realistically -- but they do not belong to normative statements on aims of education. Instead they concern educational actions as a means for the realisation of educational aims.

The false belief in the "freely developed personality" as an aim of education has been encouraged above all by Article 26, Paragraph 2 of the United Nations General Declaration on Human Rights on the 10th of December, 1948: "Education shall be directed to the full development of the human personality . . . ." In Article 29 again the "free and full development of his personality" is mentioned (Joyce, 1978, p. 12).

When we examine the context of these rather questionable formulations it becomes clear that their primary function is to protect the rights and freedoms of citizens from inadmissible state interference, while simultaneously stating the limits formed by the "rights and freedoms of others" as well as the "just requirements of morality, public order and the general welfare" (Article 29, Paragraph 2). The justified interests of the individual are being considered here in addition to those of society, but this in no way alters the fact that the "free and full" "development of the human personality" cannot serve as an aim of education (as critique, cf. Bosshart, 1951, p. 237). For this reason, it can not serve as a substitute for the educational aim of competence.

(b) The ability of moral judgement at its highest level. This is an educational aim which has been presented as a substitute for "moral competence." It has been advocated primarily by the American psychologist Lawrence Kohlberg whose work is based on John Dewey and Jean Piaget. It has found many adherents in a short time. Its basis is provided by a complicated theory of so-called "moral development" whose validity remains controversial (cf. Schreiner, 1979 and 1983).

For our present discussion it is important that Kohlberg has established his theory expressly in opposition to the aims and methods of "traditional moral education," which he considers "indoctrinating," "undemocratic" and "unconstitutional." He sees its aims in "cultivating a bag of virtues," that is "a set of approved traits such as honesty, responsibility, friendliness, service" and so forth (Kohlberg and Turiel, 1971, pp. 412, 413, 421). Kohlberg considers virtues to be questionable educational aims in public schools because in modern pluralistic societies there is a lack of consensus over these "moral character traits generally considered to be positive." At best there is the appearance of consensus: concepts of virtue or "moral character" are essentially vague and "noncontroversial" only for this reason. According to Kohlberg, "it is *impossible to define the content of moral education* in terms of factual majority consensus about good and bad behavior" (Kohlberg and Turiel, 1971, pp. 420, 424, 422). He thus prefers to limit ourselves to the *formal* aim of the ability to make "mature moral judgements."

Kohlberg starts from the assumption that there exist six stages of moral development. For him the most important differences are judgement according to societal "conventions" on the one hand (stages 3 and 4), and judgement according to "standards which have been critically examined and agreed upon by the whole society" (stage 5), as well as "universal principles of justice, of the reciprocity and equality of the human rights, and of respect for the dignity of human beings as individual persons" on the other hand (stage 6) (Kohlberg and Turiel, 1971, pp. 415, 416). Instead of aiming at virtues or "fixed values" in order to reach "conformity to society's code" (Kohlberg and Turiel, 1971, pp. 413, 428), education should be directed to the ability to make "post-conventional" or "autonomous" moral judgements according to principles.

This is not the place for a critical examination of Kohlberg's moral-educological views as a whole. Our purpose is to question whether his condemnation of virtues as educational aims is well founded and whether the aims recommended by him as substitutes are actually superior to the virtues.

The answer to both questions is "no." Kohlberg is apparently not familiar with the classical concept of virtue. What he calls "virtue" and "bag of virtues" is a self-created phantom stemming from ignorance in philosophy, from unrealistic criticism of culture and from perfectionistic prejudices. He characterises his ideological standpoint as "progressivism" and "ethical liberalism" (Kohlberg and Mayer, 1972, pp. 454, 472). The opposite to this standpoint is seen by him in those anthropological views which hold the transmission of culture to be the main purpose of education. Such views are "society-centred" and emphasise, according to him, "the common and the established." Their educational aims are defined in "trait words" related "to a conventional cultural standard which is . . . ethically relative." Educational aims merely represent not more than "particular community conventions" and are thus "arbitrary" (Kohlberg and Mayer, 1972, pp. 450, 454, 478-9).

Kohlberg insinuates that "the cultural transmission model views the development of the mind through the metaphor of the machine." He supposes it to be based upon a primitive psychological stimulus-response theory traceable from John Locke to Edward Thorndike and B.F. Skinner (Kohlberg and Mayer, 1972, p. 456).

Kohlberg has so little idea of the Aristotelian-Thomistic origins of the concept of virtue and of its anthropological fundaments that a single objection may suffice here. It is certainly true that adherents of behaviourism have supported the transmission of culture as the task of education, but it is absurd to identify support for virtues and cultural transmission with support for behaviourism, which Kohlberg, incidentally, caricatures in the most primitive way as "mechanistic." In no place does he provide conclusive evidence for a rejection of virtues as aims of education. To the contrary: Kohlberg himself can not manage without the concept of virtue. Only, he does not seem to have realised that his own educational aims also fall under the concept of virtue.

As evidence, let us look at the aims which he recommends as substitutes for virtues. We will not treat here the view of "development as the aim of education" because we have already refuted it. Leaving this so-called aim aside the following aims remain: the ability for "mature moral judgement," also known as "enlightened" morality. This is described as "the structural capacity for principled reasoning." It "means understanding and acceptance of the principles of justice and human welfare which are the foundations of our constitutional democratic society." This ability is abbreviated as "a sense of justice." "Educationally, the aim of stimulating mature moral reasoning is the development of a sense of justice" (Kohlberg and Turiel, 1971, pp. 461, 464).

Although Kohlberg considers trait words to be "unnecessary," "superfluous" and "misleading" (Kohlberg and Mayer, 1972, p. 478), he in fact uses them himself when naming his educational aims. Without such words as "attitude," "competence," "ability," "morality," "sense of justice" and "just" or "free character" (Kohlberg and Mayer, 1972, pp. 455, 461, 473-4; Kohlberg, 1980, pp. 20, 22) are expressions which designate mental dispositions (cf. Brandt, 1970). The classical name for such dispositions to morally valuable action is, however, 'virtue'. Kohlberg's "ability for moral reasoning on the highest level" is conceptually nothing else but an essential element of the old virtue of prudence (cf. Pieper, 1940). Kohlberg's "sense of justice" is an essential component of the virtue of justice (cf. Pieper, 1953).

Why is it necessary to emphasise that Kohlberg considers only *parts* of virtues? It is necessary because anthropologically he is an adherent of *intellectualism*. He expressly refers to the teaching of Socrates that virtue consists in *knowledge* of the good: "He who knows the good chooses the good;" "the reaching of virtue is the asking of questions . . . , not the giving of answers" (Kohlberg, 1980, p. 26). This view was already criticised by Aristotle who pointed out that knowledge of the good as such does not enable man to do the good. Virtue does not stem only from insights but above all from action, exercise and habituation. In contrast to Socrates and Plato, Aristotle teaches that "without such action, no one has the slightest prospect of ever becoming a morally valuable person" (Aristotle, 1956, Nik. Eth., II, 3, p. 33).

Kohlberg overestimates the intellectual bases of moral action and ignores its habitual and emotional (or motivational) bases. The concept of 'moral education' is much too wide for the narrow area to which Kohlberg limits himself theoretically and practically. He is interested only in *instruction*, which is supposed to stimulate *thinking* about moral problems. He concentrates exclusively on the ability of moral *judgement*. However, virtue is the ability of moral *action* -- understood as the readiness, inclination, habit or disposition leading to morally good action. This is the reason why Kohlberg's educational aims can not serve as a substitute for the aims of moral competence or virtue.

One cause of Kohlberg's contradictions and lack of clarity is his confusion of ends and means, and of educational aims and the methods for their realisation. In this he is like his predecessors Dewey and Piaget. His polemics against virtues and "bag of virtues" as educational aims is generally not what he thinks it is, but rather a critique of certain *methods* of moral eduction that is partly justified (cf. Kohlberg and Turiel, 1971, p. 412).

In order to be fair, it must be mentioned that Kohlberg (born in 1927) has recently revised his ideas about moral education substantially. Parallel to the change in public opinion from the radical cultural-revolutionary ideas of the American academic protest movement to neo-conservatism, Kohlberg has come to recognise the importance of that which he earlier denounced as mere "conventions" and "indoctrination." Today he admits that his theoretical assumptions about the sixth and highest stage of moral development have not been confirmed by empirical research. None of his test subjects could be said to have reached the sixth stage, not even in adulthood. On the existence of sixth-stage persons, he now writes: "Maybe it was all my imagination" (Kohlberg, 1980, p. 27). At any rate, Kohlberg recognises today the morality of the "conventional level" as the most important aim of education, and the methods he recommends are no longer merely "Socratic:" "Our approach is not merely Socratic . . ., it comes close to the indoctrinative." His aim is no longer "attainment of the fifth stage but a solid attainment of the fourth-stage commitment of being a good member of a community or a good citizen" (Kohlberg, 1980, p. 28). While his adherents among the radical critics of Western society still propagate him as an "avantgardist" and "the chief witness of critical-emancipatory educational programs" who has "developed programs for strengthening the ability to make moral judgements without reference to traditionally set moral standards" (Regenbogen, 1984, p. 8), Kohlberg himself has returned to the "conventional" virtues as aims of education which he formerly opposed so violently.

A final recommendation to accept competence and virtues as aims of education. The comparison of the ideal of competence with two other general aims of education widely recommended today brings us to a final decision in favour of competence. There is no reason to give up the ideal of competence as an aim of education. To the contrary: it is more important for modern society than ever. Why?

First of all, because the requirements which must be met under the complicated conditions of our culture have become more numerous and demanding. Secondly, because individual dependence on the abilities, performance and virtues of known and unknown fellow human beings has increased radically due to the heightened division of labour and specialisation of tasks. Thirdly, because a society greatly differentiated by cultural, political and ideological pluralism needs shared basic ideals which ensure a common order of life and which protect against the forces of dissolution (cf. Brezinka, 1986, p. 73). The ideal of competence -- if defined specifically according to the particular order of life -- can serve this purpose better than any other ideal.

Even in its most *general* form it gives orientation. It helps to ensure that abilities, knowledge and virtues are recognised as the most important and valuable personality traits. It directs attention to the tasks and requirements which are considered important within the community. It furthers the willingness to make efforts and the striving for self-perfection. These are aims of decisive importance for offsetting the risks inherent in the egalitarian welfare state: hedonism, privatism, moral minimalism. By this we mean the temptation to offer minimal performance while making maximal claims; the parasitic tendency to live at the expense of others; exclusive concentration on the pursuit of personal pleasure; the inability to limit voluntarily one's own desires; the aversion to social integration and subordination (cf. Bell, 1976; Kelpanides, 1985).

In order to avoid these dangers, common ideals are needed to raise those basic attitudes on which the real welfare of the individual and the common weal depend. They have to be *specific* ideals appropriate to the nature of human kind as a group of beings in need of discipline, and appropriate to the conditions of modern life. As far as we can see, these ideals of personality and aims of education can be delineated sufficiently well only by using the concepts of competence and virtue. For this reason, we recommend that we restore them to their rightful place in educational theory. In so doing, we would be continuing a great European tradition.

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AGORA THROUGH EDUCATION FOR FREEDOM

Elizabeth Steiner
Indiana University
Bloomington, Indiana, USA

ABSTRACT

*One of the persistent ideals for education is that of education for work, i.e. for the human being engaged in economic production. Modern developments in production are replacing the human being with computers, automation and robotics. These developments necessitate that the work ethic as an ideal for education be set aside in favour of an ethic which is suited to human beings freed of work. Some advocate the leisure ethic, but leisure is activity without responsibility. It is not suited to living a life as a responsible free human being. An ethic which does suit such a life is the ethic of happiness through rationality (*eudaemonia*). Education which serves this ethic is liberal education. It is education for all human beings. It is education for rationality and democracy. It is education for social intelligence and for the theoretical, qualitative and enactive arts. It is education for freedom.*

Introduction

Computers and electronic media have revolutionised scholarship, while robots, their offspring, have revolutionised industry. The question is whether human being in the world can be revolutionised too so that independence is possible.

Scholars, no matter their location, can inquire with other scholars. Electronic media provide the conditions for instantaneousness, and computers provide the conditions for uniformity. Satellites permit the rapid spanning of distances, and computer language (the new Latin) overcomes the differences of tongues. A worldwide community of scholars is a possibility. Together truth can be pursued. Pan-culturalism can be a reality.

Industry can be automated. Operations can be programmed into non-human devices. This Robotic Age makes possible the displacement of the human being as worker.

To realise pan-culturalism, all provincialism, including nationalism, must be transcended. The transcendence of provincialism occurs when truth is pursued, since truth is universal. Truth is not American truth or Russian truth or Indian truth or some other group's truth; it is American and Russian and Indian and all other groups' truth; it is truth of, by and for all human beings.

To realise automation, the work ethic must be set aside. Even a work ethic in which exploitation is eliminated must be set aside. Automation can be realised when the ethic of *eudaemonia* is embraced.

To embrace the ethic of happiness is not to commit oneself to a life of leisure. A life of leisure is a life without responsibility; it is a life in which one does what pleases one, not what is proper for one.

The Athenian ideal illustrates the ethic of happiness. In Aristotle's words, "wealth is not the good . . . for it is merely useful and for the sake of something else" (*Ethica Nicomachea*, Book 1.5, 1096a). The good is happiness, *eudaemonia*, all that is proper to a person.

> Now we come to happiness, which we all declare to be, and which seems in fact to be, the final good and the most complete thing, and this we maintain to be identical with doing well and living well. (*Magna Moralia*, Book 13, 1184b)

Rationality is happiness, for

> . . . we state the function of man to be a certain kind of life, and this is to be an activity or actions of the soul implying a rational principle, and the function of a good man to be the good and noble performance of these, and if any action is well performed when it is performed in accordance with the appropriate excellence . . . . (*Ethica Nicomachea*, Book 1.7, 1098a)

In the Athenian ideal, being occupied or working was antithetical to being a full and proper member of a state and so realising oneself. Being a citizen,

> implied a direct and active co-operaiton in all the functions of civil and military life. A citizen was normally a soldier, a judge, and a member of the governing assembly; and all his public duties he performed not by deputy, but in person. He must be able to speak and vote in person in the assembly; and all his public duties be performed not by deputy, but in person. (Dickinson, p. 49)

Being a citizen placed the human being in *agora*. It should be noted that slavery made possible being in *agora*. Tucker estimates that in Ancient Athens, for every one citizen, there were approximately three slaves (pp. 57-8). Today, with automation, slavery is not necessary for citizenship.

Being in *agora* distinguished the Greek way from the Roman way. The Roman was in the arena for his favourite amusements:

> Wild beast hunts -- so-called, the hunting place was the arena; naval battles for which the circus was flooded by means of hidden canals; and most usual and best loved by the people, the gladiators, when the great amphitheatre was packed close tier upon tier, all Rome there to see human beings by the tens and hundreds killing each other, to give the victor in a contest the signal for death and eagerly watch the upraised dagger plunge into the helpless body and the blood spurt forth. (Hamilton, p. 110)

Although today the trend is to the arena, *agora* can be achieved through education for freedom. In *Educology of the Free*, a theory of liberal education for a happiness ethic is presented. Education can revolutionise human being in the world so that independence is possible.

Educology for the Free

The theory of liberal education for a happiness ethic, or educology of the free, can be summarised by means of a number of guidelines.

Guideline 1: Liberal education is education for rationality. To be counted among the rational, what is done should be for good reasons; that is, reasons that would be compelling to other rational beings. One should be objective and do only that which is required of all others because it is reasonable to do it. When one so acts, one is intelligent and so rational.

Unless one uses the method of intelligence, one is not free to decide; one is a slave to desire. Self-criticism is ruled out, for one cannot judge what one desires. One cannot bring reasons to bear and so determine what to do. One is forced to act in a certain way. One is not autonomous. When one is free, reason rules. To be rational is to be free. The term 'liberal' comes from the Latin *liberalis* pertaining to free human beings, and education is a process in which human beings develop psychically. So liberal education is a process in which human beings become free or autonomous. Because freedom follows from rationality, liberal education is education for rationality.

Guideline 2: Liberal education is education for democracy. The two central ideas of democracy emerge from rationality: the dignity of the human being and her or his duty to all other human beings. The dignity of the human being arises from freedom; the human being as an "I" is an end, not a means. Dignity requires self-criticism. The duty to all other human beings arises from objectivity; other human beings, too, are "I's" (persons) and so cannot be (must not be) treated as means, as instrumentalities. All human beings as decision-makers must be honoured within the decision-making process. Being universal, not provincial (being objective or the citizen of the entire universe and not subjective, or the citizen of a nation), and being free (capable of self-criticism) are assuredly the marks of a democratic human being. Consequently, education for rationality is education for democracy, and liberal education thereby becomes education for democracy.

Guideline 3: Liberal education is a general education. 'General education' is a term which means common education, education that should be that for any human being, and so, for all human beings. General, thus, is not taken as characteristic of subject matter; the general as opposed to the particular, for example, mathematics as opposed to geography. General education is taken as opposed to specialised education, vocational or professional which looks to some occupation.

Democracy, as seen above, is the view that all are free, not only the few, insofar as everyone is a decision-maker and so self-governing. Liberal education being education for democracy, hence, is general education.

Guideline 4: Liberal education is education for social intelligence. Intelligence is a "procedure of organized cooperative inquiry," not "an individualistic possession, at best, enlarged by discussion" (Dewey, 1935, p. 71). Intelligence is "approximation to use of scientific method in investigation and of the engineering mind in the invention and projection of far reaching social plans" and not "discussion and persuasion" (Dewey, 1935, p. 73). Because intelligence is social, education to be liberal must be extended further than illuminated ideas and comprehended methods. Praxis should be cultivated. And praxis is wisdom.

> What I am anxious to impress on you is that though knowledge is one chief aim of intellectual education, there is another ingredient, vaguer but greater, and more dominating in importance. The ancients called it "wisdom" . . . Now wisdom is the way knowledge is held. It concerns the handling of knowledge, its selection for the determination of relevant issues, its employment to add value to our immediate experience. This mastery of knowledge which is wisdom, is the most freedom available. (Whitehead, p. 30)

Guideline 5: Liberal education is education in the theoretical, qualitative and enactive arts. The arts of praxis include more than what has been taken as the liberal arts, i.e., the theoretical arts. The qualitative arts and the enactive arts also are liberal arts. These arts are derived from the kinds of structures involved in intelligence (Maccia). Theoretical structures are universals. They allow one to group facts and to conceive values relative to facts. Qualitative structures are pervasive qualities. They allow one to be sensitive to the immediacy of the given, to the uniques which are experience. Each experience, as Dewey stated it,

> has a unity that gives it its name, that meal, that storm, that rupture of friendship. The existence of this unity is consituted by a single *quality* that pervades the entire experience in spite of the variation of its constituent parts. (Dewey, 1958, p. 37)

Enactive structures are methods. They allow one to act in a procedurally appropriate way, and thereby change positively the given.

> Registration of what has taken place, reference to precedent, is believed to be the essence of experience. Empiricism is conceived of as tied up to what has been, or is "given." But experience in its vital form is experimental, an effort to change the given; it is characterized by projection, by reaching forward into the unknown; connection with a future is its salient trait. (Dewey in Bernstein)

The arts of praxis or of social intelligence are called *arts* because they are perfections of the intellect in its functioning.

> Art is a virtue in the larger and more philosophical sense the ancients gave to this word: a habitus or "state of possession,"

> an inner strength developed in man, which perfects him with regard to his ways of acting, and makes him -- to the extent to which he uses it -- undeviating in a given activity. (Maritain, p. 35)

Theoretical arts when possessed allow one through universals (quantitative knowing structures) to be reflective; qualitative arts, through pervasive qualities (qualitative knowing structures) to be sensitive; and enactive arts, through methods (performative knowing structures) to be competent.

The Liberal Arts and Human Being

The possession of the liberal arts (qualitative, enactive and quantitative) permits human being, i.e. permits function of person as human being -- self-critical, autonomous, responsible, free.

The importance of the qualitative arts is that without such arts one is not sensitive to situations, one is not able to grasp their pervasive qualities and so take situational standpoints. Without such standpoints, theoretical knowing is non-functional in the life activity of human beings. The function of universals in the life activity of human beings is guided by the situation, for meaning or universals are to be embodied. In the human world, reality is concrete. When one knows reality, one knows a unique existent, one knows pervasive quality, the unity or meaning which the existent is. That is to say, one prehends the existent's qualities and comprehends the configuration of these qualities and so the embodied meaning which is the existent. The embodied meaning which is known is not an essence, because it is embodied and so, as Maritain puts it, not "disengaged from concrete reality" (Maritain, p. 126).

The importance of the enactive arts is that without them situations are not amenable to improvement. The what-is could not become the what-ought-to-be. The human world could not be made more socially just; social reconstruction would not be possible. When one knows how to take qualities and relate them as means to a total or pervasive quality as end, one knows how to bring about a unique existent, reality. One knows how to design.

That qualitative and enactive arts have not been included in the liberal arts can be noted from a consideration of the liberal arts by name. By the end of the fourth century, Capella had named the Greco-Roman subjects constituting the liberal arts. They were grammar, rhetoric, logic, arithmetic, geometry, astronomy and music. These seven liberal arts became the medieval curriculum. Grammar -- not only the study of language but also the study of literature, rhetoric -- the study of expressive oral and written speech, and logic -- the study of reasoning -- formed the *trivium* and yielded knowledge of the word. The remaining four liberal arts formed an advanced group, the *quadrivium*. They were arithmetic -- the study of number, geometry -- the study of dimension, astronomy -- the study of motion and music -- the study of proportion, and together they yielded knowledge of things (Butts). The seven liberal arts, even with later additions of knowledge of the word and of things, are clearly speculative arts. They are suited to reflection, not action.

Arts truly liberal are arts of utilising ideas, not arts for binding humanity with inert ideas (Whitehead, p. 2). Theoretical, qualitative and enactive arts must be mastered in concert one with the other, if one is to be free and so independent. Only then can one's societal transactions be reflective, sensitive and competent. Given such transactions, waste of resources and pollution will cease. No longer will persons because of exploited production seek compensation in irrational consumption.

Conclusion

Automation and robotics can replace (and is replacing) human beings in the processes of economic production. Tenaciously holding to the work ethic in this situation is irrational, and use of education as a process of preparing human beings to engage in work (work which is non-existent or not needed because of computers, automation and robotics) is also irrational. Automation and robotics free human beings from work so that they can live the life which is proper and befitting of human beings A life in the arena -- a life in which one does what one pleases -- is not a proper one for life as a human being. It is a life without responsibility. A life in the agora -- self-critical, responsible, autonomous, free -- is one which befits a human being freed from (by modern slaves -- robots, computers and automation) the drudgery of work. To live the life in the agora, one must cast aside the work ethic (for work is time taken away from living the life of a free citizen), and one must embrace the ethic of happiness through rationality (*eudaemonia*). The education requisite for living life in the agora is education for freedom. It is liberal education. It is education for rationality. It is education for democracy. It is education which is for all human beings, therefore, general education. It is education for social intelligence. It is education for the theoretical, qualitative and enactive arts. The means to life in the agora is through education for the free.

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A PROBLEM IN HISTORICAL EDUCOLOGY: NEOCONSERVATIVE AND NEO-MARXIST INTERPRETATIONS OF AMERICAN SCHOOLING REFORM

Malcolm B. Campbell
Bowling Green State University
Bowling Green, Ohio, USA

> *History was once called a habitation of many mansions, but it has been more recently described as scattered suburbs, trailer camps and a deteriorating central city. (Woodward, 1982, p. 14)*
>
> *Now wisdom is the way knowledge is held. It concerns the handling of knowledge, its selection for the determination of relevant issues, its employment to add value to our immediate experience. This mastery of knowledge, which is wisdom, is the most intimate freedom available. (Whitehead, quoted in Steiner, 1981, p. 27)*

Introduction

Educology takes as its major aim the development of knowledge about the process of education. As Christensen has argued persuasively elsewhere (Christensen, 1987), in the creation of knowledge about education an educological perspective proceeds on the assumption that factors external to the educational process, yet contributive to that process, receive treatment as independent variables and education is viewed as the dependent variable. This methodological approach clearly places an understanding of the educational process at the center of our attention. It is a focus sorely needed in the development of historiographical perspectives on the educational process, generally, and the process of schooling, especially. Spring states that

> . . . intellectual discourse about the history of education should clarify opinions about the process of education and the relationship of education to other institutions and to social events. (Spring, 1986, p. x)

Currently, intellectual discourse on appropriate pasts in American education is energised by two disparate historiographical positions in regard to the function of formal education expansion and reform in the United States: positions frequently identified as "neoconservatism" and "neo-Marxism." Although this present debate, with its accent on the problematic nature of the essential purposes of schooling, represents intellectual discourse less blurred than its historiographical progenitor, the debate between "democratic-liberalism" and "radical revisionism" of a decade ago, it has yet to articulate substantiative issues relative to what Walter Feinberg refers to as ". . . the structural place of schooling in contemporary society and the role of the school in the larger issue of intergenerational continuity and change" (Feinberg, 1983, p. 146). In what follows we will discuss neoconservative and neo-Marxist interpretations of American schooling reform and indicate major distinctions between this contemporary "post-revisionist" debate and its precursor, the "democratic-liberalism"/"radical revisionism" debate. To do so necessitates an examination of post-revisionist views of the functional and structural roles of schooling reform in the United States. Finally, we will discuss post-revisionist views of "usable pasts" in American formal education provision. If the history of education (or historical educology) can be described metaphorically as "scattered suburbs, trailer camps and a deteriorating central city," that description may well be a consequence of the post-revisionist historian's concern to establish knowledge about our educational pasts in ways closely resembling Whitehead's dictum regarding the content of wisdom quoted above.[1] Indeed, Whitehead's prescriptive definition of wisdom represents the central ethos of historiographical inquiry from an educological perspective.

Neoconservative and Neo-Marxist Interpretations of American Schooling Reform

Less than a decade ago it appeared that the promised emergence of a "new history of education" in the United States was premature. In an essay targeted at filling in certain gaps in our memory of historiographical positions in American educational history (or historical educology), Sol Cohen asserted that those who sought to revise prior claims on the history of education, a group he characterised as a re-emergent social-reconstructionist school of educational historians, had contributed to a healthy demythologising of the history of American education. He argued, however, that in their eagerness to contribute new insights to American educational historiography, these "new reconstructionists" had collapsed the ". . . ambiguity, the incompleteness, the complexity . . ." of the past to suit their perceptions of contemporary social issues.[2] Cohen's reservations about the "new history of education" were quickly followed by Diane Ravitch's strident attack on what she termed "radical revisionism" in the historiography of American education. Committed to a "democratic-liberal" tradition in American education, a tradition in which popular, state-sponsored education provision contributes to the development of a democratic polity by maximising the dispersion of equal educational opportunity, Ravitch portrayed "radical revisionists" as repudiating the "democratic-liberal" tradition in American education provision:

> The work of the radical revisionists is characterised by their thorough rejection of liberal values and liberal society and their shared belief that schools were *consciously* designed by liberal reformers as undemocratic instruments of manipulation and social control. The radical indictment . . . is that American schools have been oppressive, not liberating, and that they were *intended* to be oppressive by those liberal reformers who developed them. [emphasis original] (Ravitch, 1978, pp. 30-1)[3]

At the end of the 1970's, the historiography of American education, especially the historiography of reformist positions in the provisioning of state-sponsored formal education, i.e., schooling, stood sharply polarised: Reminiscent of Progressive historians of an earlier day, "democratic-liberalists" argued that the expansion of public education and reforms associated with that extension in the United States had exercised a beneficient, or at minimum a benign, contribution to American society; "revisionists," with a few exceptions, argued that the provisioning of popular education had contributed to the maintenance and reproduction of existing forms of social structure, forms which were unequal and devoid of social justice. As Michael B. Katz stated,

> . . . historical scholarship during the last decade has exposed the myths obscuring the origins of public schooling. Public education neither emerged in a blaze of egalitarian . . . zeal nor did it alter patterns of inequality . . . [t]he development of public education cannot be understood apart from social relations between classes, anxieties about disorder, attempts to shore up a social structure under stress, and the invention of modern forms of bureaucracy. (Katz, 1979, p. 256)

This historiographical bifurcation of American education persists. At present the past of state-sponsored schooling provision and reform efforts targeted at that provision are portrayed fashionably as an intellectual debate over the central purposes of schooling by "neoconservatives," on the one hand, and "neo-Marxists," on the other. Placing contemporary historiographical discourse on American patterns of formal education within the confines of this nomenclature seriously distorts the complexity of issues which "post-revisionist" historians address. To gain insight in regard to those issues it is useful to review briefly claims that neoconservatives and neo-Marxists bring to historiographical debate in the United States.

Neoconservative historiography is related to a more diffused discontent with the shaping and implementation of national policy efforts in American education policy, efforts centred on but not limited to the Great Society programs and their successors targeted at disadvantaged youth. As Frederick M. Wirt has stated,

> the neoconservative stance boils down to two propositions: *national policy efforts don't work and they are dangerous to other values in the society.* (Wirt, 1980, p. 6)

Neoconservatives oppose national policy efforts insofar as, in their view, these efforts are potentially disruptive of the necessary consensus which underlies American society. In their view American schooling provision should be locally governed and less committed to equalising opportunity, the latter they perceive as occuring at the expense of quality (cf. Glaser, 1984).

Speaking of the rise of consensus history in post-World War II American historiography, Richard Hofstadter argued that Progressive historiography had accented polarised conflict as an interpretive principle to the point of self-caricature; "the pendulum had to swing in the opposite direction if we were to have any new insight into Amercan history," he wrote. Grob and Billias labelled historiography which de-emphasised polarised conflict as "neo-conservatism" for the reason that consensus historians "seemed to hark back to the conservative historical position that had prevailed prior to the advent of the Progressive scholars" (Grob, Billias and Hofstadter quoted in Sternsher, 1975, p. 8). To a degree Hofstadter's "pendulum swing" accounts for the contemporary rise of neoconservative historiography in educational (educological) research. Neoconservative history, however, continues to view American educational reform within a polarised conflict model.

In his recent history of the common school reform movement, Carl F. Kaestle views antebellum school politics within the context of a basic split between "cosmopolitans" and "localists" -- people who disagreed on the optimal placement of public education authority and finance (Kaestle, 1983, pp. 146-160). Kaestle's brief book on common school reform is hardly neoconservative historiography. While he does treat the opponents of centralised reform sympathetically (a key interpretive position in neoconservative historiography), Kaestle specifically rejects the neoconservative position that "unified, tax-supported, common-school" systems are unnecessary and have failed due to greater concern for the issues of equality and diversity than for the effective teaching of cognitive skills (Kaestle, 1983, pp. 223-4).

In fact to date neoconservatives have not developed a historiographical position toward the American educational past based on explicitly articulated interpretive principles.

Concerned with what they view as the loss of academic rigour in contemporary public education in the United States and the intrusion of the federal government in defining the boundaries of educational provision, the neoconservatives assume that meritocratic strategies for rewarding academic achievement, educational attainment premised on equality of opportunity rather than an equality of outcome, and an educational tradition not in need of substantive reform are key factors on which to erect appropriate social policy. As a recent student of post-World War II American social policy states,

> . . . the public school system is not in jeopardy of replacement . . . [I]t is hard to imagine any significant reform of social policy in the near future. (Murray, 1984, p. 235)

The neoconservatives especially discredit both the content and style of federal government initiatives associated with Lyndon B. Johnson's "Great Society" in extending educational opportunity to the disadvantaged and the poor. Again, Charles Murray:

> While the quality of secondary education was sliding down hill, it could not cling to the excuse that at least it was providing some education to disadvantaged students . . . It was providing worse education, period. (Murray, 1984, p. 108)

Charles Murray attributes his perception of a decline in public school quality to a permissiveness of the late 1960s which generated discentives for students. The permissiveness, in his view, was catalysed by a reform consisting of three major components: (a) an intellectual climate favouring educational reform that negated "traditional classroom norms in favor of a more open, less disciplined . . . treatment of the learning process;" (b) federal government intervention and its establishment of "projects implementing preferred strategies, which in the 1960s invariably favored a less traditional, less white-middle-class attitude toward education;" and (c) judiciary involvement, especially the United States Supreme Court's 1967 *Gault v. Arizona* decision stipulating that "due process was required for suspension and the circumstances under which students could be suspended or otherwise disciplined were restricted" (Murray, 1984, p. 173). The source for Murray's view of contemporary educational reform is Diane Ravitch's neoconservative history of post-World War II educational reform, *The Troubled Crusade: American Education, 1945-1980.*

In Ravitch's perspective post-World War II educational reform has accented equality of educational opportunity at the expense of lowering academic achievement standards and supported the expansion of the civil rights movement to include affirmative action programs designed to provide special treatment to surmount previous discriminatory actions. The "new politics" of education in the reform era 1965-1980, Ravitch asserts, was not an unqualified success.

> Much had been gained because of the active dedication of the federal government and the courts to the rights of all children. To the extent that the pursuit of good ends jeopardized equally valuable ends, like academic freedom, institutional autonomy, and diversity; to the extent that absorption by educators in bureaucratic procedures overshadowed the educational function of the schools; and to the extent that government programs gave new responsibilities to academic institutions while depriving them of the authority needed to carry out those responsibilities, there remained a compelling agenda for future educational reformers. (Ravitch, 1983, p. 320).[4]

In brief, Ravitch's view of educational reform in the 1950s, 1960s and 1970s posits a crusade in which the public education system must maintain its accent on "the disciplined use of intelligence, allied with cooperation and good will." In her scenario the appropriate past of American public education is given to the expansion of educational opportunity and "the endless prospect of self-improvement and social improvement" (Ravitch, 1983, p. 330). Neo-Marixist historians are not as optimistic about the past, present and future of American education.

As Walter Feinberg reminds us, there are two chief concerns in "radical revisionist" history. One concern is the study of the class interest of nineteenth-century public education leadership in the United States together with opposition developed in response to the formation of public education; the second is aimed at schooling consequences as they relate to "the status and well-being of particular groups in society" (Feinberg, 1983, p. 117). An assumption central to both concerns is that the public schools do not, never did, and were not designed to meet the needs of "poorer" groups. Rather these schools were structured to contribute functionally to the development of corporate capitalism by legitimising in youth attitudes and values deemed essential for participation in the industrial sector.

Both versions of revisionism accented the "social control" theme in which educational reform occurred as an effort to control urban crime and poverty as well as an attempt to vitiate the threat of class struggle by the working class. Clearly "revisionism" in social history and neo-Marxist "reproduction" theory have aided us in our understanding of educational reform ideologies. The social control theme, however, has tended to obscure the specific political contexts in which particular educational reforms were made.

> The view of educational reform as an essentially repressive process aimed at the control of the "poor" or the working class by an "elite" or bourgeoisie has directed attention away from both the political conflict and struggle over education, and . . . from an analysis of the content of educational reform. (Curtis, 1983, p. 100)

In the late 1960s and 1970s neo-Marxist and revisionist interpretations of American educational reform centred, then, on the repressive nature of schooling. The Bowles and Gintis "correspondence" thesis, correlating different levels of schooling with vertical occupational levels; Greer's refutation of the contribution of public education to upward social mobility in the United States; and Michael B. Katz's claim that popular education reform did not enjoy widespread support, especially by poor and working class parents who viewed it as an imposition forged within the upper classes; each study exuded repression (cf. Bowles and Gintis, 1976, pp. 151-200; Greer, 1972; Katz, 1968; for a lucid, perceptive critique of assumptions implicit to Greer's and Katz's historiography, cf. Feinberg, 1983, pp. 120-140). In his perceptive analysis of neo-Marxist historiography applied to the development of compulsory education in South Australia, Partington states that neo-Marxist revisionists tend to disregard the internal dynamics of schooling policy. His reservation is worth quoting at length:

> Little or no interest is shown by neo-Marxists in whether the education received by working class or by any other children improved or deteriorated, or what better or worse means in educational terms . . . To study educational ideas and modes of schooling in a social vacuum would indeed be absurd, but it is . . . more absurd to reduce them to epiphenomena, . . . which external forces compress into any shape and which gains significance from motives and purposes of these forces. If there is no form of the educationally good which has some independence from its context, educational debate would be quite vacuous. (Partington, 1984, pp. 269-270)

Partington's critique of neo-Marxist revision in educational historiography is part of a growing dissatisfaction with what some neo-Marxist critics of American education view as an undue emphasis on functionalist and structuralist explanations of the social control thesis in interpreting the "zigs and zags" of educational reform in the United States.

In what may be called "post-revisionist" historiography, neo-Marxist critics deaccent the impact of historical materialism on schooling reform policy and replace it with a perception of the school as "relatively autonomous," "contending that it is merely a site where 'resistance' against domination occurs" (Schrag, 1984, p. 261). Apple queries:

> Are schools -- as important sites of the state -- simply "ideological state apparatuses" (to quote Althusser), ones whose primary role is to reproduce the ideological and "manpower" requirements of the social relations of production? Or do they also embody contradictory tendencies and provide sites where ideological struggles within and among classes, races, and sexes can and do occur? (Apple, 1982, p. 14)

From an educological perspective one can fault conventional neo-Marxist historiography for its overemphasis on the extent to which major reform movements in American education have been structured by the dictates of a dominant ideological "hegemony," to borrow from Antonio Gramsci's concept. "Post-revisionist" historiography has refined the notion that the self-interest of dominant socio-economic groups in American educational reform represented a victory of corporated elites over working-class groups (cf. Peterson, 1985, pp. 3-25, 207). Moreover "post-revisionist" neo-Marxist historians in developing warranted assertions about schooling reform, while broadening our understanding of the social legitimising and social reproductive functions of the formal education process, have pointed to the multifaceted nature of educational reform. More importantly, however, this historiography has called our attention to the role which values play in guiding educological scholarship and, specifically, historical educological, values which do not inhere in individuals.

> . . . [T]hey are also attributes of social practice and institutions. They present themselves as *facts* of social life, reinforced by institutional practice, embodied in a language of description, and reproduced by educational procedures . . . [H]istorical scholarship can . . . highlight the *constructed* nature of these "facts." It can capture the way in which . . . abstract values were turned into institutionalized practices, and thereby historical scholarship can set the stage for all evaluation of practice to take place. It can, however, *only* set the stage. (Emphasis original.) (Feinberg, 1983, p. 173)

There is clearly educological richness found here.

"Post-revisionist" neo-Marxist critiques of the American educational past seek to redress several shortcomings in "revisionist" neo-Marxist historiography. Appreciative of revisionist efforts in general to expand the definition of education, "post-revisionist" neo-Marxists have focused attention on the interplay between the school's transmission of acceptable cultural alternatives and that transmission process of other institutions. Insofar as this methodological focus accents individualised transactions between students and teachers, it appropriately takes historiography into the "black box" of schooling institutions and thereby corrects a one-dimensional view of the teaching process targeted at the economic determinants of out-of-school corporate structures. This focus, however, is not without its problematics:

> What recede into the background are the larger economic, intellectual, and social purposes toward which the transaction is aimed. Receding . . . are the struggles between different groups in directing the reproductive process in such a way that these purposes continue to be served or superceded by others. (Feinberg, 1983, p. 146)

Utilising perspectives markedly reminiscent of American Social Reconstructionist critical theory in regard to schooling practice in the 1930s, "post-revisionist" neo-Marxists argue that schools cannot be analysed as institutions removed from their socio-economic contexts; schools are essentially political sites involved in the "construction and control of discourse, meaning, and subjectivities;" and, most importantly, commonsense knowledge and values that both explicate and structure ideas about teaching are other than *a priori* universals. Henry A. Giroux calls our attention to the necessity to locate "specific normative and political assumptions" underlying classroom teaching practices, surely a worthy educological task (cf. Giroux, 1983, p. 46).

"Post-revisionist" neo-Marxists, as do neoconservatives, derive their views of the limitations of past educational reform from perceived concerns about the present state of American education. "Post-revisionist" historiography, in sharp contradistinction to some of its precursors, does not conceive of the past as the extension of specious present; it does, however, consider the concern for developing a past which is usable. To that issue, we now turn.

Neoconservative and Neo-Marxist Conceptions of Usable Pasts in American Schooling Reform: Educological Considerations

Neoconservative and neo-Marxist "post-revisionist" historians would agree that the present state of formal education in the United States is a troubled one. Solutions to this perceived situation run the gamet of supporting the current provisioning of public education at local and state levels to thoroughly reconstructing the nature of that provision with the aid of proactive, indeed interventionist, federal educational policy. Two examples of opposed perspectives for improving the contemporary state of American formal education provision appear in W. Norton Grubb and Marvin Lazerson's *Broken Promises: How Americans Fail Their Children* and Diane Ravitch's *The Troubled Crusade: American Education, 1945-1980.* Write Grubb and Lazerson:

> Schooling has become essential as a means of access to occupations, and learning itself is prized almost exclusively for its economic benefits . . . Older conceptions of liberal education have been eliminated at every level of schooling . . . in favor of vocational conceptions. The alternative -- to reestablish education as the elaboration of critical and creative processes -- will require redefining education so that its primary concerns are no

> longer social control and individual economic gain. To fulfill the promise of education . . . means reasserting literacy and critical thinking as the necessary attributes of any free individual, and reorienting all of schooling toward this goal. (1982, p. 293)

Diane Ravitch asserts:

> In the crusade against ignorance, there have been no easy victories, but no lasting defeats. Those who have labored on behalf of American education have seen so many barriers sealed, so much hatred dispelled, so many possibilities remaining to provide the basis for future reconciliation. To believe in education is to believe in the future, to believe in what may be accomplished through the disciplined use of intelligence, allied with cooperation and good will. If it seems naively American to put so much stock in schools, colleges, universities, and the endless prospect of self-improvement and social improvement, it is an admirable, and perhaps even a noble, flaw. (1983, p. 330)

Such is the dichotomised content of "post-revisionist" historiography on the current state of formal educational provision in the United States. This content rests on dissimilar views on the "usable pasts" of educational reform.

"Post-revisionist" neo-Marxism, like its earlier "radical-revisionist" counterpart, deaccents the importance of significant schooling improvement predicated on educational reforms drawing their inspiration from empirical research. Liberal educational reform, in their view, posits a scheme in which the dull get duller and the bright get brighter (Feinberg, 1983, p. 95; Feinberg, 1975, Chapter 4). Secondly, while "post-revisionist" neo-Marxists view the contributions of educational reform to structual reform in the United States as minimal and existing at the level of what Andre Gorz calls "non-reformist" reforms, a currently fashionable neo-Marxist view of educational reform is to argue that it can aid in the transformation of society by actively restructuring the relations between ideology, knowledge and power within a cultural context (cf. Giroux, 1984, pp. 22-40). These perspectives on the significance of educational reform in helping to shape "usable pasts" for American formal education are not shared by neoconservative "post-revisionist" historiography.

Neoconservative historiography tends to have two favourite targets of educational reform for particular scrutiny: (1) the unwarranted intrusion of centralising forces, e.g., the federal government's increased presence in post-World War II educational policy, formal education provision and (b) the harmful monopoly of that provision by public schooling together with its accent on equality of opportunity at the expense of academic excellence (cf. Serow and Glazer, 1984. pp. 122-128).

"Post-revisionist" historians have helped us to view American educational reform in other than a stereotyped manner. In doing so, however, they have tended to construct historical portraits by forcing their ideological preconceptions on the past. Unfortunately, they have avoided the historiographical importance of studying the past on its own terms. In his analysis of the dynamics of political contexts of urban school reform in Atlanta, Georgia, Chicago, Illinois and San Francisco, California, 1870-1940, Paul E. Peterson points out that the reform legacy experienced by contemporary American schools was not completely institutionalised in many American cities until the post-World War II era. Arguing that the twin themes of urban educational reform-expansion and professionalisation (rooted as they were in middle-class professional ethos) reflected both the self-interest of those committed to reform principles and a "disciplined concomitant concern for the public interest" separate from the class interests of corporate elites, he concludes:

> A dark day has not come over American education. But the elan, energy, confidence, and self-esteem that accompany times of educational reform . . . must constantly be renewed if American schools are to continue to enjoy the multiclass popular appeal that has historically been theirs. (1985, p. 209)

Clearly this "post-revisionist" conceptualisation of educational reform has taken us some distance refreshingly from the dichotomised portrait of reformist thrusts as either uniformly positive or negative. Perhaps we can utilise this perspective on "reform" more appropriately as we search educologically for "pasts" that, if not usable, are useful in refining our judgements of past formal education provisioning. Hopefully, this view will encourage us to build historical mansions in American education and do it wisely.

Notes

1. The concept of 'educational pasts' is used throughout this analysis; as David B. Tyack and others have reminded us, there is value in discovering anomalies which one historiographical framework does not explain satisfactorily. Cf. Tyack in Warren, 1978, p. 57.
2. See especially Cohen, 1976, pp. 325-330. Essays announcing the promise of the "new history of education" were numerous at the beginning of the 1970s, and they are referred to conveniently in Jarausch, 1986, p. 225. For a discussion of methodological perspectives in the new history of education from a cultural revisionist perspective see Cremin, 1972, pp. 1-17.
3. For an equally strident critique of Ravitch (1978), see Katz, 1979, pp. 256-266.
4. For a concise statement of her neoconservative views on American educational reform during the Progressive and post-World War II eras, see Ravitch, 1985.

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AN EDUCOLOGY OF ECONOMICS: EDUCATION AND DEVELOPMENT IN THE THIRD WORLD

Ibrahim Alladin
Riverina Murray Institute of Higher Education
Wagga Wagga, NSW, Australia

ABSTRACT

After the Second World War, many economists conceived education as the main agent for social and economic development. As the former colonies attained self rule, they began to expand their educational systems in order to achieve economic growth. After three decades of educational expansion many Third World countries are left with an education system which is absorbing a large percentage of their national budget. Rapid economic growth is yet to become a reality. The assumptions which led to the present state of education in developing countries need critical examination. Several conceptions of development are possible, and each has implications for the way education should be structured and for the purposes it should be made to pursue. (In this analysis, 'Third World countries', 'developing countries' and 'underdeveloped countries' are used interchangeably.)

Development Thinking: A Brief Overview

The subject of development began to achieve prominence in the literature of economics in the 1950s (Karabel and Halsey, 1977, p. 14). According to development economics, developing countries lacked essential infrastructures (modern technology, institutions, agricultural modernisation, social services and so forth) which were the characteristics of modern industrialised nations. Those who lacked them were underdeveloped, and development, according to some thinkers, was the process of transition from one situation to the other.

This way of thinking about development was intensely promoted by the industrialised nations, particularly the United States, which emerged as the new capitalist centre after the Second World War. The external support of national ruling classes against the challenges from the Communist Bloc became an all important objective in the capitalist camp. The national ruling classes in the underdeveloped countries saw the United States and Western Europe as guardians of their interests and as socio-political and economic models for development. The development of modern industrial capitalism in these countries therefore became their long term aim, and it was held in common with the ruling classes of the western powers (Frank, 1969).

The economic thought which influenced policy makers, educational experts and advisors in the formulation of policies for the development of the countries of the Third World was conceptualised and systematised as "modernisation theory." Modernisation theory and its variants gained prominence in the 1950s. Its essence lies in its teleology and its claim to scientific objectivity. It assumes that all countries have to "develop" along a single upward slope to become roughly like the United States, the idealised model and ultimate goal of "development" (Sunkel, 1977).

Modernisation theory is based on three main assumptions. First, there is the "unilinear" assumption that the Third World ought and can "develop" along the path blazed by the industrialised nations, with advanced capitalism as the highest stage of "social improvement." Second, underdevelopment is attributed to the absence or insufficiency of "development" of certain internal characteristics in developing countries, whether these be capital, technology, cultural attitudes, social organisation or entrepreneurial elites. Simultaneously, one crucial internal structural feature is singularly and consistently downgraded, distorted or ignored, namely that of social relations of production as understood by the critics of modernisation theory. And thirdly, the industrialised nations are deemed to have had and to have a positive role in fostering "development" to the Third World via economic and political relationships. These basic themes, implicit or explicit, are to be found recurring in modernisation literature (Geertz, 1963; Einsenstadt, 1966).

The above assumptions have been and continue to be made by modernisation policy makers such as those employed by western governments, United Nations organisations, the World Bank and various philanthropic foundations involved in educational activities in the Third World. They are to devise strategies whereby the newly independent nations in the Third World could, in the shortest possible time, amass the human capital necessary for take off into modernity (Dore, 1976).

By the early 1960s, economists and other social scientists began to question the modernisation model of development and its underlying assumptions. They began to disentangle some of the issues which arise in the modernisation sociology of development. Writers, especially using a Marxian paradigm, started to expose the theoretical deficiencies of modernisation theory. Development policies based on the modernisation model of development came under severe scrutiny. Theories of dependency, developed by a group of scholars in Latin America, formulated a new approach to development. Dependency theorists basically see the relationship between the industrialised nations and the Third World as one of exploitation and domination. By transferring resources and educational institutions, the developed countries seek to maintain their dominance over the underdeveloped countries (Cardoso and Faletto, 1979).

It is against this background that one can examine educational reforms and development in the Third World.

Educational Expansion: The Key to Economic Development

The United Nations Charter of 1945 expressed the view that education was a basic human right, and many developing countries began to accept this view. This belief, combined with the theoretical assumption that education is "the key that unlocks the door to modernization" (Harbison and Myers, 1964) led to a massive increase in the demands for education. Education, according to modernisation theorists, was expected not only to overcome the economic problems of Third World countries, but also to bring about a greater degree of egalitarianism and develop or strengthen democratic political institutions (Almond and Coleman, 1960). Imbued with this faith and facing serious shortages of skilled labour, developing countries, at the outset of independence, devoted their resources to the rapid expansion of educational facilities and the provision of qualified persons to take up positions in economic and administrative institutions (Court and Ghai, 1974, p. 1).

The expansion of education which proceeded in the 1960s in developing countries was due to a number of factors. Partly, it was a manfestation of what has been called the "revolution equality" through which the former colonial teritories were passing (Buchanan, 1975, p. 10). The notion of equality operating here was not personal equality, but equality on an international level. The newly independent Third World nations were attempting to assert their equality vis-a-vis the developed nations. In this process, formal education in developing countries was seen as a means of adopting cultural symbols and values which were cherished in western societies (Buchanan, 1975). The western vision of schooling had been successfully "transported" to the developing countries. One of the consequences, unforeseen by modernisation theorists, but argued by dependency theorists, has been increased Third World dependency on the industrialised nations (Carnoy, 1974; Altbach and Kelly, 1978).

International aid giving agencies, influenced by the modernisation ideology, transferred massive resources to "improve" the quality of education in developing countries. The World Bank, one of the main aid donors, became the determinant agency of educational policies to be adopted in the Third World. Under President Robert McNamara, the World Bank increased its educational funding by a substantial amount (see Table 1).

The World Bank, with its commitment to a particular vision of development, maintains a strong concern for general education as well as training in specific skills. Its principal aim in lending for education is to assist developing countries in the immense process of human development to achieve the technical capacity and experience to become "modernised." Education has been recognised by the World Bank as a central element in the modernisation process (Alladin, 1985).

The World Bank seeks to promote educational development on the basis of the following broad principles:

(a) There should be at least a minimum basic education for all, available as fully and as soon as resources permit.

(b) Further education and training beyond the basic level should be provided selectively to improve, both quantitatively and qualitatively, the knowledge and skills necessary for the performance of economic, social and other roles.

(c) A national education system should be viewed as a comprehensive system of learning, embracing formal, nonformal and informal education, all working with maximum possible internal and external efficiency.

(d) In the interests of both increased productivity and social equity, educational opportunities should be equalised as fully as possible. (World Bank, 1974, pp. 6-7)

	Through 1963	1964-68	McNamara 1969-73
Agriculture	456	621	2,589
Education	5	157	726
DFC*	206	483	1,224
Industry	550	118	598
Non-Project	173	455	715
Population	---	---	66
Power	1,834	1,461	2,245
Telecommunications	47	152	695
Tourism	---	---	60
Transportation	2,038	1,466	3,257
Urbanisation	---	---	52
Water Supply	11	119	589
Technical Assistance	---	---	14
Total (millions in U.S. dollars)	5,321	5,030	12,849

Source: C.P. Bhambhri, *World Bank and India*, New Delhi, Vikas Publishing House, 1980, p. 60.

*DFC -- Development Finance Companies

Table 1
Bank and IDA Lending to Developing Countries

Having entered the field of education in 1962, the World Bank by mid-1971 had made educational loans based on the above principles, totalling US $431 million, and it planned to increase its lending rate in the field of education at least three-fold over the next few years (World Bank, 1971, p. 14). As funds flowed in, education expanded rapidly. For example, between 1950 and 1975, student enrolment in educational institutions in Africa, Asia and Latin America increased nearly four-fold, from 93.7 million to 356.6 million, and public expenditure on education rose from 2.3 per cent of their GNP in 1950 to 4.3 per cent in 1977 (Bacchus, 1983, p. 193).

In their efforts to achieve rapid economic growth and social development, most Third World countries spent between 20 and 30 per cent of their annual budgets on education (Coombs, 1981). Such expansion did not seek to reform the content of education; it did not aim to make the knowledge, skills and attitudes which the schools engendered more relevant to the development needs of these countries.

Some social scientists, such as Balogh and Dumont (Balogh, 1962; Dumont, 1969) had already pointed out that the type of education offered in schools was detrimental to the economic development of developing countries. They suggested the need for more agriculural, vocational and practical education, rather than the traditional academic type of education.

By the 1970s, the results of educational expansion were becoming visible. Modernisation theory came under attack. Third World governments which had poured a substantial amount of their national budgets into education in order to achieve economic growth were stunned by the new problems which emerged (Alladin and Alladin, 1986, p. 276). Educational expansion created an imbalance between the output of the school system and the absorptive capacity of the labour market. Developing countries were faced with rising rates of unemployment, economic instability, social unrest and increasing poverty. The combined unemployment rates in 1970 were estimated at 29 per cent for all developing countries in Africa alone. As Todaro points out, "Government over-investment in post-primary educational facilities often turns out to be an investment in idle human resources" (Todaro, 1979, p. 260).

The increasing number of educated unemployed and the growing political unrest among those with an education, but with bleak job prospects, are often attributed to the failure of reforming the educational system in developing countries (Bacchus, 1983, p. 194). Furthermore, many Third World countries are still far away from achieving basic literacy, where, on the average, about one-third of those 6-11 years of age and two-thirds of those 12-17 years of age are still not attending school. Illiteracy is increasing, not decreasing (World Bank, 1974, p. 29).

The drive towards modernisation and economic development in developing countries resulted in what Dore calls a "diploma disease" (Dore, 1976). Critics described education as "the great training robbery" (Berg, 1971). The western model of development was turning out to be a mirage. Not only was the western-type systems of schooling proving to be too expensive, but also criticism was mounting that the bookish schooling provided by the western model was quite unsuited to predominantly agricultural societies. It ignored their languages, histories, literature, traditions and religions (Alladin and Alladin, 1986, p. 277). This type of schooling was developed under colonial rule. It was infused with a foreign culture. It intended to educate a minority elite to help run the country. In all these respects, it was divorced from the needs of developing societies (D'Aeth, 1975, p. 12). What emerged from the western type of education was a form of "educational and cultural imperialism" (Carnoy, 1974), aimed at transforming the Third World into a neo-colonial relationship with the west (Altbach and Kelly, 1978).

Neocolonialism in Education

In the 1970s, social scientists and educators formulated a "new" theory, dependency theory, to explain the educational "failures" of the previous decade. This theory emerged as the ambiguities and contradictions in orthodox development theory (modernisation theory) became apparent. The new theoretical influences came from economic history and Marxist political economy (Frank, 1969; Wallerstein, 1974). Concepts such as legitimacy, hegemony, mystification, the social reproduction of knowledge, cultural imperialism, educational colonialism and others have been employed in explanations of how education contributes to Third World dependency (Simkins, 1982, p. 436).

In these analyses, education is seen as part of the process whereby peripheral countries are maintained in that position, part of the "development of underdevelopment," part of a process which promotes and safeguards the economic and commercial interests of the developed world. Such an approach takes the opposite view expressed by modernisation theorists, by arguing that education, far from being a key component in development, modernisation, economic growth and so on, is in fact yet another instrument of enslavement, a way of tightening, rather than loosening the dependency bond (Dale, 1982, p. 412). Similar to this argument is what might be called the "neocolonialism" in education.

The "neocolonial" explanation of education in developing countries gained prominence after the publication of *Education and Colonialism* in 1978. In this book Altbach and Kelly argue that neocolonialism is linked with the colonial past in that important elements of the structures built under colonialism continue to operate in the Third World, and these have a continuing impact. The essential structure of the educational system is perhaps the most dramatic example of the continuing impact of colonialism. Along with school structures came curricular orientations and often the language of instruction and of intellectual discourse and books and journals. Third World nations that were under the control of specific European countries generally retain elements of the specific colonial heritage of that country.

The most lasting legacy of colonial control is seen in what has come to be known as neocolonialism, the domination of the rich industrialised countries over the poorer countries of the Third World, even though the latter are officially independent (Altbach, 1971, 1978). In educational terms, control may take place through foreign aid programs, capital aid for buildings, technical assistance training, publishing firms, newspaper publishing, the media, recognition of examinations and diplomas, research links between universities in the industrialised countries and the Third World. These elements bring about a "servitude of mind" among students in developing societies through the perpetuation of western content, structure and forms in their educational systems (Dale, 1982, p. 412).

Neocolonialism, as Altbach points out, is a planned policy of advanced nations to maintain their influence in developing countries (Altbach, 1971). This influence is essential if western nations are to control trade and have access to raw materials. The penetration of transnational companies in many developing countries has been a further setback to the autonomous development of the Third World. These companies provide research funds and sponsor Third World students to universities in Europe and North America. Upon their return, they are expected to serve the transnational corporations in the student's own country or to an overseas subsidiary. This has resulted in "brain drain" (Watson, 1982).

The neocolonialist approach, stemming from dependency theory, therefore, sets out to indicate much more precisely just how education contributes to the "development of underdevelopment." Whereas in modernisation theory, the predicted contribution of education to development is seen in terms of economic growth, the neocolonialist approach demonstrates that the legacy of colonialism continues through internal structures, including education, with many far reaching implications for reform, change, modernisation and development.

This new theoretical insight into development has produced a number of options for educational planners in the Third World, ranging from "balanced" expression at all three levels of provision, to mobilisational policies emphasising nonformal education and innovative models of teaching, studying and learning (Simkins, 1982, p. 438). But the limitations of the new theories have also become obvious. As Simkins notes:

> It [dependency theory] has not solved the question of whether Third World development is logically or empirically possible within the world system. Therefore the role and type of education that should be encouraged is unclear. To provide a moral critique of capitalism is not the same thing as providing a theoretical basis for Third World educational development. (Simkins, 1982, p. 438)

In many ways, the 1970s offered little to the Third World educational planner. Educational problems have become larger and more complex. In 1980, the World Bank Education Sector Policy Report, summarising the educational developments in the previous two decades noted that educational reforms in developing countries have failed to achieve both a more equitable society and an equilibrium between the productive capacity of the education system and the absorptive capacity of the labour market. According to this Report, serious efforts will have to be made during the next several decades to make educational systems genuinely relevant (World Bank, 1980). Educational planners are wondering how.

Education for Liberation

Many Third World governments have become disillusioned with efforts which failed to address economic and social problems prevalent in developing societies. A number of scholars from the Third World have attempted to provide alternative development strategies. They seek to offer an alternative focus as to the source of underdevelopment and the means to overcome it. They provide a link between the socio-political and economic analysis and a common basis for action. One such scholar is Paulo Freire, whose works have made significant contributions to the study of education in the Third World.

Freire's analysis is built upon the conviction that nothing good or profitable can be secured for the poor members of the Third World without a drastic or radical change in the structure of Third World societies, as well as a broader radical change of the current socio-political, economic and cultural world order. Freire begins his explanation with "man's central problem," humanisation, which he considers to be the human vocation. He looks at the historical distortion of this vocation and the struggle for humanisation, for the emancipation of labour, for the overcoming of alienation, for the affirmation of men and women as persons (Burns, 1979, p. 145). Freire argues that the humanistic and historical task of the oppressed is to liberate themselves and their oppressors as well. This leads him to the central problem of ways in which the oppressed, as divided, unauthentic beings, participate in developing the theory of education for their liberation (Freire, 1972). Freire's theory is often called "liberation theory" or "critical education."

Freire developed his theory in Latin America. While working on adult literacy learning, he developed an approach in which education is seen as a process for liberation, humanisation and consciousness raising (Mackie, 1980, p. 57). "Education for liberation" seeks to liberate the oppressed from the oppressors. The basis of his theory is found in what Freire calls "conscientização" (conscientization). He explains:

> As the cultural revolution deepens "conscientização" in the creative praxis of the new society, men will begin to perceive why mythical remnants of the old society survive in the new . . . I [Freire] interpret the revolutionary process as a dialogical cultural action which is prolonged in "cultural revolution" once power is taken. In both stages a serious and procound effort at "conscientização" -- by means of which men, through a true praxis, leave behind the status of "objects" to assume the status of historical "subjects" -- is necessary. (Freire, 1972, p. 158)

Conscientization for Freire,

> whether or not associated with literacy training, must be a critical attempt to reveal reality, not just alienating small talk. It must, that is, be related to political involvement. (Freire, 1972, p. 19).

Political involvement begins in the relationships of the learning situation, to develop an alternative way of acting and working, "an egalitarian dialogue rather than a relationship of assertion and dependence" (Burns, 1979, p. 147). In this dialogue,

> the illiterate discovers himself . . . as author or the world and as creator of culture, discovering that all human creation is culture . . . then he will start the operation of change of his interior attitudes . . . with the help of educators specially trained for this animation work, [these debates] rapidly become

> a powerful and effective means of awareness-making, by transforming radically the attitude towards life of those who take part in these debates. (Freire, as quoted in Burns, 1979, p. 147)

Conscientization, therefore, leads to a growing objective and critical awareness of experienced reality with a view to changing it. It is a dialogical praxis in which the teachers and learners together, in the act of analysing an oppressed and dehumanising reality, denounce it while announcing its transformation in the name of the liberation of all men and women. This is what Freire calls "cultural action." It is an essential component of Freire's theory of education, known as "critical education" (Furter, 1985).

For Freire, then, the role of education is liberation, and liberation is development. Development is more a question of justice rather than wealth or material (Curle, 1973). His theory is based on the firm belief that every human being, however ignorant, is capable of casting a critical eye on his or her environment. As the oppressed become critically aware of the reality of their personal and social life, discerning its contradictions and identifying the causes and consequences, they accustom themselves to transforming that reality by means of practical action. With increasing involvement in this process of transformation, they perceive more readily the implications of prevailing conditions, and their critical consciousness is sharpened (Fagerling and Saha, 1983).

Freire's educational theory has brought hope to the many disillusioned educators and politicians in the Third World. It has been adopted at various times in parts of Africa, Asia and Latin America, where education has been seen as the main tool for development. In places like Guinea Bissau, Angola, Mozambique and Brazil, "education for liberation" has been adopted as part of the development goals `and strategies. Freire, himself, has been involved in literacy programs in many countires and has campaigned to use education as an effort to liberate and humanise people, rather than to dominate and domesticate them. He derives his views from his own action and reflection as an educator in Brazil, and as an exile, he committed himself to action for human liberation (Freire, 1974, p. 45).

"Education for liberation" is a campaign which includes an examination of education inside and outside schools. Freire writes that education cannot be reduced to the activities of schools, and liberating education can only be put into practice outside the school system (Mackie, 1980). This is one of the strengths of Freire's theory of education. For Freire, institutions called schools and universities, are not free. The main educational task lies outside the school system. But he argues that education for liberation would call for an open inquiry in schools and open inquiry in what is taught and studied in the classrooms. Freire agrees with Ivan Illich, who describes the schools, no matter their level -- primary, secondary or tertiary -- as instruments of social control (Mackie, 1980, p. 66). Freire believes that schools themselves are domesticating institutions. He writes

> . . . A school itself builds the alienation of us, in us, precisely because the task of schools -- in a wrong way . . . in a wrong perception -- is to transfer to the students the existing knowledge. (Mackie, 1980, p. 66)

Existing knowledge, argues Freire, blocks us from creating new knowledge; schools transmit existing or old knowledge without creating new knowledge. This process is properly called "mythologisation of reality." According to Freire, only education for liberation implies demythologising reality, while education for domestication, which is taught and studied in schools, implies mythologising reality. In order to maintain the status quo, the ruling class seeks to mythologise consciousness. Freire argues that in this way false consciousness is created. Education for liberation has the task of demythologising this false consciousness (Mackie, 1980, pp. 66-7).

Friere's educational thought has not escaped criticism. Berger (1974) and Paulson (1977) argue that it is being utopian in its optimistic view of education as an agent of social change. A further difficulty with it is its educational method, which can be used to serve any political position. In other words, liberation can also mean oppression under a new master. Liberation does not necessarily resolve the problems of development. In spite of these difficulties, however, Freire has presented an alternative view which has attracted a wide following in many countries, even to the point of dominating educational thinking in some. His theory has appealed to the oppressed masses of many Third World countries because Freire has provided a model for action. Dependency theories have merely provided explanations for why programs based on modernisation theories will not produce development. Freire holds out the promise of education as a powerful liberating force. To realise that power, the oppressed require their own theory of teaching and studying. Freire's concept of conscientization has provided the oppressed with an alternative to the existing narrative forms of education. Conscientization has a significant political dimension to it. People who are engaged in the process of liberation, or are discovering their liberated consciousness, can only continue the process when they commit themselves to the world. Conscientization is much more than simply a process of increasing awareness. It is essentially geared to the radical transformation of social reality (Connolly, 1980, pp. 70-1).

Freire's educational theory is not only relevant to developing countries, but to any society where there is oppression. He writes that conscientization is not a concept which belongs to the Third World or Latin America only. Oppression, alienation and poverty are not characteristics exclusively confined to the Third World. Conscientization is a human process, and it provides a challenge to all to examine critically the nature of western capitalism, the role of education in such societies and the duality between intentions and actions of the ruling classes in these societies, all of which undermine and hinder the process of liberation and the role of education in liberation. Freire has devoted much of his effort working in developed societies. As Burns notes, the application of the process of conscientization follows from an understanding of development as liberation from any form of oppression (Burns, 1979, p. 149).

Conclusion

It is apparent from this overview of recent development in Third World education that development strategies and education's responses to them are far from complete. Although development theories and recent influences have provided frameworks, theories and methods to generate educological research, education in the Third World still poses enormous challenges to economists, educologists and educators.

Three decades of economics and educological research have met with both successes and failures. The optimism expressed after the Second World War that education could be a major force for social change and economic growth did increase enrolment in schools, but failed to effect desired reforms in schools and society. Social inequality, argue the opponents of modernisation theory, could not (and can not) be overcome by merely increasing enrolments. Dependency theorists maintain that, without changes in social structures, schools could (and can) only reproduce existing social relations and the inequalities presently existing in them. Both modernisation and dependency theories have made a contribution to comparative educology (i.e., comparative education studies and research). But the growth and improvement of comparative educology have also been limited by theoretical inadequacies and deficiencies of research method.

The ways in which education has been linked to economic development are open to at least two serious criticisms. First, it is often assumed that all Third World countries are facing the same economic and social problems. Educologists and economists have conducted regional case studies and have concluded fallaciously that the problem is the same in all developing countries. The literature in comparative educology is incomplete and imbalanced. It shows an emphasis in focus on Southeast Asia and Latin America. Studies on Africa, South Asia and the islands of the Pacific and Carribean are far fewer in number. Even though most developing countries have undergone similar colonial experiences, they do not all share similar cultures, histories and political and economic structures. Second, comparative educologists, such as Altbach, Arnove and others, argue that educational systems are more affected by external forces than has been appreciated by researchers and educational planners. They urge that research be conducted to identify these external forces, and they emphasise the importance of a world-system approach and perspective by both researchers and planners. External forces undoubtedly have an influence, but the internal structures, the class conflict, racial diversity and ethnic and religious differences in many Third World countries often determine the character of the national systems of education. Research carried out on Third World countries has been little more than a replication of work in western countries, employing research variables and methods traditionally used in research about western educational systems and western industrialised societies, but unverified as being applicable for research in Third World countries. Development theories have yet to solve the question of whether Third World development is possible within the world-system.

One of the reasons for the failure of earlier efforts at educational reform can be attributed to inadequate diagnosis of educational problems in the Third World. Many educational planners in the west have generally assumed that education alone can bring about economic development. It is often exaggerated what schools can do. Furthermore, the development strategies promoted for use in the Third World over the past three decades have often been inappropriate in terms of Third World resources, goals of development and needs of the population. Freire's educational philosophy (or philosophical educology) has appealed to the masses of the Third World because it addresses these issues.

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The term 'educology' means knowledge about education, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for forming educology includes that which is necessary for conducting analytic, empirical (experimental and non-experimental) and normative (or evaluative) inquiry. The educological perspective is inclusive of scientific, praxiological, historical and philosophical discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studies of educology, one can develop educological understanding towards the ends of heightened sensitivity for educational situations, effective participation within educational situations and the articulation of sound theory about educational situations.

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EDITORIAL
THE HOLMES GROUP REPORT AND EDUCOLOGY

Worthwhile education is the process in which teachers manifest a concern with helping students to develop their powers of inquiry, reasoning and appreciation for evidence in the resolution of problems of all kinds -- ethical and moral, as well as scientific and technological. The good educational institution is the one which places its emphasis on providing experiences which maximise the probabilities that students learn how to inquire and to study effectively so as to achieve desirable learning outcomes. The good school, college and university are places where students are afforded the opportunity to build upon their previous experiences, to explore their interests, to experiment with ideas which are new to them and to extend their theoretical expertise, procedural competence and ethical soundness. The good teacher is the one who is concerned with how students come to their views, the soundness of their arguments, the warrants which they can give to justify their conclusions, their willingness to inquire and to reason, their ethicality in thought and deed. To serve these concerns well, the good teacher must have theoretical, practical and procedural understanding of education, and such understanding implies knowledge about education. The proper role of departments, faculties, schools and colleges of Education (i.e. Education in the sense of educology) is (1) to establish and extend knowledge about the educational process through research and (2) through teaching, consultation and publication, to assist to develop an understanding of this knowledge.

In order to play its proper role adequately, a department, faculty, school or college of Education (educology) must have an academic staff or faculty which exercises its expertise in educological research and which holds a sound understanding of the current knowledge available from educology. Educology has the same relationship to the educational process as does sociology to society and social processes, anthropology does to humankind and cultural process and economics does to systems of production and distribution. Educology is the fund of knowledge (or body of organised warranted assertions) about the educational process.

The Holmes Group Report (*Tomorrow's Teachers*) has included as one of its recommendations "to make the education of teachers more intellectually sound," and to achieve this goal, the report notes that a necessary reform is to "engage in the complex work of identifying the knowledge base for competent teaching." This is a worthy reform to which to aspire, and the educological perspective points the way to achieving this reform.

The educological perspective views the educational process as the dependent variable, and it analyses other factors (e.g. attitudes, economic circumstances, values held in the society, political situations) in terms of how and to what degree they influence the educational process. The educological perspective leads one to consider education, not in terms of the sociology of education, but the educology of society, not the psychology of education, but the educology of mental processes, not the anthropology of education, but the educology of cultural processes, not the economics of education, but the educology of economic systems and relationships.

Within colleges and universities, many faculties or departments analyse education in terms of how the process influences other processes or phenomena. Sociologists ask how it affects status, class and roles in society. Economists ask how it contributes to production, income, distribution and competitiveness. But educologists, and only educologists, have the educational process as their central, primary concern. Only they ask how might all of those other processes and situations affect the educational process. Only they ask how teaching, studying and guided learning function in relation to each other.

Since their beginning, departments, faculties, schools and colleges of Education have had major difficulties with establishing their identity and their raison d'etre, vis a vis other faculties within universities. Adoption of the educological perspective and commitment to the production of educology through sound, well disciplined research constitute two major steps towards formulating a clear identity for departments, faculties, schools and colleges of Education (as units of educology) and giving those units a worthwhile raison d'etre.

But educology is not only valuable for giving organisational units of educology a clear and worthwhile identity. It also has practical utility for the resolution of current educational problems. Educology is the comprehensive fund of knowledge about the educational process. It was Diderot who advised us that a collection of facts do not make a science, any more than a heap of stones make a house. There must be system and order. Educology gives system and order to knowledge about education, for educology implies knowledge about

(1) meanings of terms used in discourse about the educational process (analytic philosophical educology),
(2) past educational practices (historical educology)
(3) current educational practices and situations (scientific educology),
(4) effective educational practices (praxiological educology) and
(5) worthwhile goals and ethical relationships for the educational process (normative philosophical educology).

The organisation which is implicit within educology is directly applicable to structuring curriculum within programs of teacher education, counselor education, school administration, educational leadership and any other professional program intended for qualification for a career within the educational process. For example, curriculum about teaching, to be comprehensive and well rounded, would need to include the following categories:

(1) the analytic philosophical educology of teaching (i.e., knowledge about the meaning of terms used in discourse about teaching);
(2) the historical educology of teaching (i.e., knowledge about past teaching);

(3) the scientific educology of teaching (i.e., knowledge about current teaching practices);

(4) the praxiological educology of teaching (i.e., knowledge about effective teaching practices -- those which maximise the probabilities of achieving intended learning outcomes);

(5) the normative philosophical educology of teaching (i.e., knowledge about worthwhile goals for teaching and ethical relationships for teaching).

Just as there is the educology of teaching, so there is the educology of counseling, of administration, of special education, of higher education, of secondary education, of elementary education, of preschool education, of language education, etc.

Educology is also inclusive of comparative education (i.e., knowledge about the educational process in any and all cultural and social settings). The development of knowledge, in the sense of warranted assertions, about the educational process requires comparison of relevant cases which constitute evidence for those assertions. Comparison is therefore inherent in the task of conducting sound research and inquiry about the educational process, and it follows that the product of this sound research and inquiry, viz., educology, is inclusive of comparative educology.

The Holmes Group Report urges that teacher education programs should be structured so as "to make prospective teachers thoughtful students of teaching and its improvement." This recommendation is essentially calling for prospective teachers to learn how to inquire educologically. This is a sound recommendation because rational, constructive action within the educational process is only possible when those undertaking the action have a sound idea of the probable consequences of their actions. Educology provides that knowledge, and there is an urgent need to include educology in the curriculum of teacher education programs.

Editors

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AN EDUCOLOGY OF SOCIETY: PARENT AND HOME VARIABLES WHICH AFFECT STUDENT ACHIEVEMENT

Martha Steckman
Steckman and Associates
Soldotna, Alaska, USA

ABSTRACT

Students of the Northwest Arctic School District (Soldotna, Alaska) were tested on the Science Research Association (SRA) Achievement Test during the spring of 1983. The population was 97 percent Inupiaq Eskimo, and of the students tested, approximately 45 percent scored at or below the 30th percentile, and approximately 9 percent scored at or above the 70th percentile. A structured interview survey of the parents of the students below the 30th and above the 70th percentile was conducted, and the results were analysed to identify the parent and home variables which correlated with student academic achievement. A total of 23 significant relationships were found to exist between student achievement and demographic and attitudinal variables. It was found generally that family background, home environment and parental attitudes have significant effects on students' academic achievement in school.

Factors Which Affect Student Academic Achievement

Over the past 20 years, a concerted effort has been made to identify factors which affect student academic achievement. Walberg (1979) identified the educationally stimulating qualities of the home environment as one of three sets of factors. Mowry (1972), Bronfenbrenner (1974) and McDill, Rigsby and Meyers (1969) found that parental involvement and the home environment were critical for the achievement of students, from preschool through high school. Iverson and Walberg (1982) analysed the results of 18 studies on the correlation of home environment and learning, and they found that ability and achievement were more closely linked to the sociopsychological environment and intellectual stimulation in the home than to the parental socioeconomic status.

1. Parents' I.Q. Kalinowski and Sloane (1981) developed a schema to summarise the key concerns of researchers who had investigated the links between the home environment and school achievement (see Figure 1, p. 2). In explaining their schema, Kalinowski and Sloane comment that

> The path from parents' I.Q. to the home environment reflects Williams' (1976) concern for the antecedent influence of parental intelligence on the complexity of the home environment. Models which omit this path are subject to serious specification error. Burks (1928 cited in Majoribanks, 1979) was the first to look at the impact of parent's intelligence on the home environment and child I.Q. However, the path coefficients of

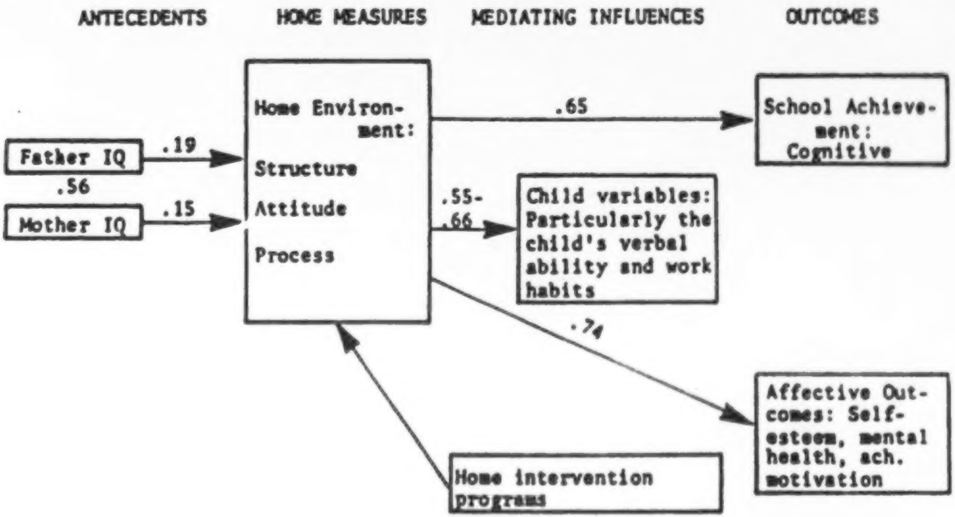
ANTECEDENTS
HOME MEASURES
MEDIATING INFLUENCES
OUTCOMES
Father IQ
.56
Mother IQ
.19
.15
Home Environment:
Structure
Attitude
Process
.65
School Achievement: Cognitive
.55-.66
Child variables: Particularly the child's verbal ability and work habits
.74
Affective Outcomes: Self-esteem, mental health, ach. motivation
Home intervention programs

FIGURE 1: Cognitive Map of Home Environmental Influences on School Achievement

0.15 and 0.19 are the small, but significant, effects found by Williams.

2. Demographic and Sociological Variables. According to Kalinowski and Sloane (1981), the structure of the home environment encompasses both demographic and sociological variables like family size, ordinal position in the family of the child in question, the type of housing and neighbourhood, family ethnicity, family income, educational level of the parents and the prestige of the father's occupation. Kohn and Schooler (1973) demonstrated the significance of the effect that occupation has on the degree of initiative and autonomy found in the home. Spaeth (1976) observed that the level of prestige of the occupation of the father is a strong indicator of the complexity of the home environment. Coleman (1966) in his analysis found that family background is the most important factor in a child's education. Mayeske et al. (1973) undertook a reanalysis of Coleman's data and identified three family influences which seemed to support school achievement:

(a) student and parent expectations for academic achievement;
(b) the extent to which both students and parents participated in activities to support said expectations;
(c) the student's attitude toward hard work as being an antecedent to success.

Peaker (1967) identified parental attitudes as an important component in the home environment. He found that parents' attitudes were closely connected with core values and life objectives held by the children and that parents' attitudes correlated closely with the educational achievement of their children. Others (Dave, 1963; Wolf, 1964; Stodolsky, 1965; Honzik, 1967; Hanson, 1972; Wulpert et al., 1975) have found that parental attitudes seem to have significant effects on the development of a child's verbal skills as well as on academic achievement (Dave, 1963; Kreisberg, 1967; Keeves, 1972; Kellaghan, 1977b).

4. Language of the Home. Research has consistently confirmed that the verbal ability of a child is strongly affected by home and background factors. That ability remains relatively stable during the school years. The considerable influence of the home on the development of a child's intelligence as measured by standardized tests, especially during the preschool years, has been well documented (Bloom, 1964, 1976; Majoribanks, 1972). Bloom (1964, 1976) has found that a significant proportion of the variance on intelligence at age 17 can be accounted for at age 8, and it, therefore, would appear that there is little possibility schools could have a large impact on language development independently. However, family factors, coupled with the school experiences, can have a mutually supportive effect on verbal ability (Mayeske et al., 1972; Brimer et al., 1978).

The strong relationship between a child's home environment and achievement in school presents a very basic problem in terms of accepting data from a school system which indicates that higher achievement is a function of better schools. Factors such as student's maturity and attainment level at entry (language acquisition is critical) into school and the quality of away-from-school support provided by parents and the community during the school years must not be ignored.

Numerous studies have identified, as major factors associated with educational attainment, various structures of the home environment. These findings apply to disadvantaged as well as to the more general populations (Kellaghan, 1977b). Wiseman (1967) indicated that home variables should be given almost twice the weight of neighbourhood and school variables when accounting for student achievement.

5. Parent Involvement. Matuszek (1977) conducted a review of research pertaining to parent involvement in education. She found that data from a number of unpublished studies indicate that parent involvement can be effective in improving the academic achievement of low-income and ethnic minority children. In his re-examination of Coleman's report, Jencks (1972a) found that schools with active PTA (Parent Teachers Association) chapters averaged higher student achievement, regardless of their social background. In 1969, parent involvement was found by McDill, Rigsby and Meyers to be the critical factor in the achievement as well as in the aspirations of high school students. They concluded that the degree of parental and community interest in quality education is "the critical factor in explaining the impact of the high school environment on the educational aspirations of students." The results of these studies point to a trend: It becomes apparent that when parents demonstrate a good deal of interest in their children's educational achievement, they promote the development of attitudes which are a key to achievement.

Another variable of the home environment which affects students' school achievement is the economic condition of the home. Many American families have encountered distressing financial, economic, social and emotional hardships in the last fifteen years (from the early 1970s through the mid 1980s). Lash and Sigal (1975) concluded that "healthy, achievement oriented youth are becoming an 'endangered species' in the urban centers of the United States." They reported a sharp increase in juvenile arrests since 1960. These kinds of reports not only implicate the home environment as being a critical factor in students' school achievement, but also strongly suggest that student motivation is strongly influenced by parental behaviour under economic duress.

6. Parental Influence. Madaus, Airasian and Kellaghan (1980) cite Kellaghan (1972a) in support of the thesis of parental influence:

> In addition to verbal skills, such factors as temperament, ambition, attitudes toward test situations, ability or tendency to work quickly on a task with strict time requirements, carefulness about where to put marks, attitudes toward the examiner, toward competitiveness, toward risk taking -- all deeply embedded in cultural and family background -- can influence scores on more general achievement batteries, or for that matter, scores on any type of test.

Scott and Walberg (1979) insist that schools alone are insufficient to provide a quality education for children. They believe that

> the best hope for many children lies in developing strategies which seek to change the home or promote home-school-student alliances.

They cite other research to substantiate their claim, including White, Bloom, Scott and Haertel and Talmadge. White (1975) found evidence that

> for many three-year-old children, a delay of six months or more in language and problem solving skills indicates the unlikelihood of a successful education.

Bloom (1964) inquired into preschool learning, and Scott (1974, 1979) developed the Home Start Reports, both of which offer evidence for the importance of the home environment for provision of quality education for children. Haertel and Talmadge (1979) examined school and home-related factors and found only one of 25 instructional practices, "corrective instruction," significantly related to achievement, whereas 13 significant correlations were obtained between achievement and home environment factors.

In some situations, schools may treat parents as unimportant, giving them the feeling of being powerless. Parents may either fear the school personnel, or they may receive discouragement in taking an interest in school and the activities of their children. An important question which arises from this situation is

> Will involving parents who feel unimportant and powerless and whose children are performing poorly in school, change those attitudes and improve the children's achievement? The more recent research seems to indicate yes, if the parent involvement is comprehensive and long lasting and preferably if it is begun at an early stage. (Henderson, 1981)

Kalinowski and Sloane (1981) reported on a number of investigations from the University of Chicago which studied the home's influence on the educability of children during the decade from 1960-70. These studies used a method which focused on specific educational experiences which took place in the home rather than on the family's socioeconomic status. The purpose was to study what parents do to facilitate their children's cognitive and affective growth. The motivation for developing this method of investigation was prompted by two concerns. First, status characteristics accounted for only about 10 percent of the variation in children's educational achievement. A great deal of variation was found to exist in the educational achievement of children within each status level. Second, status variables could not be used to provide specific strategies to parents or to schools to improve the situation for any child (Bloom, 1980).

7. Home Environment and Achievement. Dave (1963) began his study with the premise that specific aspects of the home environment pressed for student academic achievement, and he identified six process variables which he hypothesized could explain differences in school achievement. Kalinnowski and Sloane (1981) listed the six process variables are as follows:

(a) the parental press for achievement -- the parents' aspirations for the child and their interest in, knowledge of and standards of reward for the child's educational development;
(b) language models -- the quality of language used by the parents and taught either directly or indirectly to the child;
(c) academic guidance -- the availability and quality of help provided by the home for school related tasks;
(d) intellectuality -- the intellectual interests and activity of the family; more specifically, the types of reading done, the nature and extent of conversations about ideas and the nature of the intellectual models which parents provide;
(e) activity in the home -- the degree to which parents stimulate and encourage their children to explore the larger environment;
(f) work habits -- the degree of structure and routine in home management and the emphasis on educational activities over other pleasurable things.

Dave (1963) found the correlation between the overall index of the home educational environment and fourth and fifth grade achievement tests was +0.80. Correlations were the highest with tests of reading and word knowledge and lowest with tests of spelling and computation. The results indicated that the greatest impact made by the home is on the child's language development. There was less influence on specific skills taught in school (Bloom, 1980).

Therefore, when one considers that the single most accepted measurement of I.Q. is a standardised intelligence test constructed, in part, to assess oral and written competency in Standard English and that the single most used measurement of academic achievement is the standardised achievement test constructed to determine one's comprehension skills in both oral and written communication, also in Standard English, the degree to which the parents, the social situation and the psychological environment influence the child's ability to function in the academic areas is very great.

Kalinowski and Sloane (1981) stated that since such strong relationships exist between a child's home environment and the child's achievement in school, it "is discouraging if nothing can be done to alter the patterns for children who are raised in deprived or ineffective environments." It is essential that educators realise that these patterns exist so that the patterns can be assessed and effective intervention be undertaken to alter patterns which are working against the child's interests and needs.

8. Home Intervention and Early Education Programs. Home intervention and early education programs were designed and implemented to decrease the problems which children from deprived environments encounter upon entry into school. Kalinowski and Sloane (1981) found that the earlier the home environment is improved, the better the chance for significant gains. However, Smith (1968) found that parent intervention can be effective in later years as well (sixth grade or the sixth year of school). In numerous studies, the degree of parent involvement has been found to be the critical factor in terms of the success of home intervention programs (Schaefer and Aaronson, 1972; Levenstein, 1970; Karnes, 1969).

> Parental involvement refers to parents' interests, motivation, and involvement in providing experiences in the home that are conducive to the child's achievement in school. (Kalinowski and Sloane, 1981)

A number of studies which compare differing levels of parent involvement in experimental school programs found that children whose parents are most involved make the greatest gains (Boulder Valley, 1975; Gillum, 1977; Radin, 1972; Woods, 1974; Rich, 1976).

Studies which have been conducted to assess the importance of parent involvement in a child's educational success have resulted in significant findings. Mowry (1972) conducted an investigation of the effects of parent participation in Headstart. He found that Headstart centres with high degrees of parent involvement consistently had children who performed higher on standardised tests. Goodson and Hess (1975) reviewed the evaluation of 29 preschool programs for disadvantaged children and found that, "as a group," the programs consistently produced significant immediate gains in children's I.Q. and in their school performance. The programs also seemed to alter the teaching behaviour of parents in a positive direction. However, Bronfenbrenner (1974) found from his own research and in his review of the research of others that long-term gains in cognitive growth (I.Q.) can be achieved by early intervention only if the mother is actively involved in her child's learning.

In their longitudinal study of 11 early childhood projects involving parents, Lazar, Irving and Darlington (1978) found that participating children performed better in school and that the children had significantly fewer assignments to special education classes and fewer grade retentions than children from the control group for many years after completion of the project. In Boulder Valley Colorado School District (1975), a kindergarten project was conducted which included supplementary parent involvement. "High need" children whose parents provided teacher-designed home stimulation scored significantly higher on standardised tests. Furthermore, they were able to maintain their gains longer than other "high need" children who received only an in-school program. In three Michigan school districts, an experiment was conducted which involved parents in performance contracts designed to improve children's skills. The district with the most comprehensive parent program attained the greatest gains (Gillum, 1977). Benson, Buckley and Medrick (1980) found that children whose parents are involved with them in education and/or other school activities achieve more in school, regardless of socioeconomic status. All of these findings are significant in terms of parent involvement in a child's education, but it was Rankin (1967) who contributed one of the most interesting findings. He found that children who are high achievers are much more likely to have active, interested and involved parents than children who are low achievers.

The results of early intervention programs and other planned programs designed to involve parents in their children's education are significant when a school district is concerned with raising student academic achievement.

> First, the success of these programs in changing parent's attitudes and behaviors supports the contention that the home environment can be altered. Second, these studies show that positive changes in the home environment often produce increases in children's achievement, thus supporting the validity of the use of home measures in examining influences on school achievement. (Kalinowshi and Sloane, 1981)

Purpose and Procedures of the Study

The purpose of this study was to examine parent and home variables which, according to the research literature, affect student academic achievement. Since no instrument addressing home variables and parental attitudes had heretofore been prepared for the Inupiaq Eskimo population, a structured interview survey was designed and pilot tested in the Northwest Arctic School District at several sites. The questionniare required 62 responses to demographic as well as attitudinal questions.

1. The Sample. For the sake of comparison, two groups, those at or above the 70th percentile rank and those at or below the 30th percentile rank on the norm-referenced SRA Achievement Test, were identified as the sample population for this study. The questionnaire was initially to be administered to all students scoring at or above the 70th percentile on the SRA Achievement Test and to 10 percent of those who scored at or below the 30th percentile.

Students who achieved at the 30th percentile or lower on the 1984 SRA Achievement Tests were selected by a random sample as follows: Utilising the 1984 SRA norm-referenced test scores and beginning with grade 11 (the 11th year of school), every 10th student who received a composite score at or below the 30th percentile rank on the Science Research Associates (SRA) Achievement Tests was identified. In those cases where the 10th student was an identified special education student, the next regular education student was selected instead. A total of 78 students were originally identified. After further screening, it was determined that 15 of those 78 identified were special education students. They were eliminated from the sample. Of the remaining 63 students, those students who belong to the same family were eliminated according to the one whose name came second on the original list. Once the siblings had been identified and those falling second on the list eliminated, 30 students were selected on an every other name basis.

Administration of the questionnaire was on a voluntary basis, and parental consent to participate in the study was required. Sixty-six percent of the high group and 47 percent of the low group returned the questionnaires. The findings reported in this study apply to the participating parents and students. However, tentative generalisations may be made about the population of interest, since the total universe of both groups, Eskimo and Caucasian, are relatively homogeneous.

2. Treatment of the Data. The responses from the returned questionnaires were coded and transcribed onto key punch forms. All data were analysed through the Statistical Package for the Social Sciences (SPSS). The Chi Square procedure was used to determine whether a significant relationship existed between student achievement and each of the questionnaire items. This procedure was selected because of the nominal nature of the variables. The 0.05 level of significance was used to identify statistically significant relationships.

Major Findings

A total of 23 significant relationships were found to exist between student achievement and demographic and/or attitudinal variables. The study was designed to include, as factors, demographic and attitudinal variables which have been identified by other researchers as being important to student academic achievement. The study verified previous studies which examined such variables as family income and child's ordinal position in the family. However, in terms of family structure, no significant relationship was found to exist between student achievement and whether the student lives with both parents or in some other family configuration. The causal factor in this finding was that the majority of the students in both groups live with both parents.

A significant relationship was found to exist between student achievement and ethnicity. Fewer Caucasian students were found to be in the lower scoring group than Eskimo, and the high scoring group contained 60 percent Eskimo and 40 percent Caucasian students. Parents of the high scoring group were found to be 58 percent Eskimo and 42 percent Caucasian. In the homes of the high scoring group, it was found that English was used more often. Also, the parents were younger. They had a greater family income. They were better educated, and they had a lesser dependence on a subsistence lifestyle.

Firstborn or only children occurred more often in the high scoring group. There were fewer children living in the home. They went to bed earlier than children in the low scoring group. There were more books in their homes, and they received more parent help with their school work.

Parents of the high achieveing students tended to rank academics as the most important school goal. They tended to rate, as most important, reading to their children when young, having books in the home and communicating with their child's teacher. More parents of the high scoring students tended to rate the importance of their child going to college or university as most important. They believed that their child should be at school daily and that she or he should have responsibilities at home. Few of the parents of high scoring students tended to rate the importance of the school as meeting either the recreational or the cultural needs of the child as very important.

Conclusions

Family background, home environment and parental attitudes all influence a child's academic achievement. Family background and home environment often include cultural values. Competition, excelling above peers, motivation and accepting the belief that hard work is requisite to success may not be compatible with the values of the culture. Another factor which may affect achievement is the discipline in the home. Parent expectations for a child's behaviour and achievement are closely linked to a child's success in school.

The lack of reading comprehension is probably the greatest deterrent to academic success in any culture. Perhaps the most crucial factor, pertaining to home environment, relates to the language spoken in the home. The degree to which the child internalises the abstract concepts of language is the degree to which that child will comprehend the written word when she or he begins to read, assuming that the child is reading in the language she or he has mastered (i.e. that the language of instruction in school is the same as that of the home).

Parental attitude is a third major factor which influences student achievement. Attitudes are the way parents and guardians convey feelings such as approval, interest, appreciation, excitement, pleasure or dislike, distrust, disgust, fear and hate. More often than not, these attitudes are conveyed without language accompaniment. Body posture, facial movements, voice pitch, gestures and distance (the silent language) all convey a message to the child about the appropriateness of her or his behaviour.

Habits also convey strong messages. Habits such as cleanliness, good nutrition, punctuality, organisation, work ethics, contributing to the family income or resources and sobriety all communicate a silent but powerful message. In essence, what the child observes, in terms of the behaviour of others, especially parents, is the behaviour that she or he will imitate.

Value systems are developed early in life, and parents are the crucial factor in the development of such systems. Parental attitudes, behaviour and habits provide the model upon which a child bases her or his attitudes, judgements and decisions. Attending school daily, punctuality, self-discipline, co-operation with teachers, finishing schoolwork and tenacity in achieving goals are strongly influenced by the psychological and sociological environment of the home. If student achievement is to be improved appreciably, school districts and state departments of education must develop a planned program of parent education leading to parental involvement and participation in the child's formal education.

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AN EDUCOLOGY OF POLITICS: THE USE OF SOVIET LITERATURE AS A TOOL OF MORAL EDUCATION

Mary F. Nichols
Arizona State University
Tempe, Arizona

ABSTRACT

Soviet novels were examined in order to determine whether they could be considered to be educational tools for the transmission of the moral and ideological values of the Communist Part of the 1980's. The research sample was restricted to those novelists who were published in government publications (gosizdat) and those who were published outside of the Soviet Union (tamizdat) since the 1970's. Within this group, novelists were chosen who treated the themes of the Soviet Constitutional Guarantees and the moral and ideological values which those Guarantees seek to protect. The primary purpose of the study was to determine whether the work of these novelists could be validly viewed as an educational tool as expressed by speeches of Communist Party officials and literary critics presented to Soviet writers' unions.

Introduction

Every sovereign state places demands upon its educational institutions to promote attitudes which are consistent with the values of the state. No where is this more true than in the USSR, a state which uses not only schools and universities, but also institutions such as courts of law, theatres, cinemas, workers unions and the media (television, radio and newspapers) as agents of moral education. This study undertakes to identify what the major values of the Soviet state are in the 1980's and to what degree the state uses novels and novelists as agents of moral education.

The Sample

The study is limited to contemporary gosizdat novelists whose works were written after 1970, published for the first time in the Soviet Union from 1974 to 1984 and translated into English by a Soviet publishing firm. The novels were distributed in the United States by Import Publications Inc., an approved distributing agency for the Soviet government. There were fourteen novelists who fit the limitations, but four of these were eliminated from the sample because they duplicated nationality of author and major theme (production).

The study was limited to contemporary tamizdat novelists who wrote in the Soviet Union after 1970 and whose works were published for the first time in the West between 1974 and 1984 and were translated into English. These works have never been published in the

Soviet Union. Only six novelists fit the limitations, and all were used in the study. The gosizdat novelists selected for the sample were

Chingiz Aitmatove, *Rannie Zhuravli*. *Soviet Literature*, 1976, no. 5, 3-77; *The Cranes Fly Early*. Translated by Eve Manning. Moscow: Raduga publishers, 1983. (Theme: war novel.)

Victor Astafiev, *Tsar-ryba*. Translated by Vladimir Koltunov. Moscow: Progress Publishers, 1982. (Theme: Siberia.)

Yuri Bondarev, *Vybor*. Moscow: Sovetsky Pisatel, 1982; *The Choice*. Translated by Mikhail Krakovsky. Moscow: Raduga Publishers, 1983. (Theme: War novel.)

Oles Honchar, *Bereq lyubvi*. Moscow: Khydozhestvenaya Literature, 1977; *Shore of Love*. Translated by David Sinclair-Loutit. Moscow: Progress Publishers, 1980. (Theme: Nationalities literature.)

Lev Korneshov, *Skhvatka s Nenavistyu*. Moscow: Molodaya Gvardia, 1976; *Brush with Hate*. Translated by Yuri Sviridov, David Sinclair-Loutit and Chris English. Moscow: Progress Publishers, 1979. (Theme: War novel.)

Oleg Kuvayev, *Territoriya*. Moscow: Sovremennik, 1975; *Territory*. Translated by Robert Daglish. Moscow: Progress Publishers, 1982. (Theme: Working class novel.)

Ivan Lazutin, *rodnik Probivaet Kamni*. Moscow: Sovremennik, 1974; *Through the Thorns to the Stars*. Translated by Jan Butler. Moscow: Progress Publishers, 1979. (Theme: Working class novel.)

Zigmynd Skujins, *Muzhchina vo Tvete Let*. Moscow: Sovetsky Pisatel, 1977; *A Man in His Prime*. Translated by Laura Beraha. Moscow: Progress Publishers, 1981. (Theme: Scientific-Technical Intelligentsia.)

Boris Vassilyev, *V Cpiskakh ne Znachilsya*. Moscow: Pravda, 1978; *His Name Was Not Listed*. Translated by Vladimir Dober. Moscow: Progress Publishers, 1978. (Theme: War novel.)

Nikolai Pavlovich Voronov, *Makushka Leta*. Moscow: Profizdat, 1976; *The Crest of Summer*. Translated by Yuri Nemetsky and Sergei Svrovatkin. Moscow: Progress Publishers, 1980. (Theme: Production novel.)

The tamizdat writers selected for the sample were

Fazil Iskander, *Sondro iz Chegema*. Ann Arbor, Michigan: Ardis Publishers, 1979; *Sondro of Chegem*. Translated by Susan Brownsberger. New York: Vintage Books, 1983. (The author still resides in the Soviet Union.)

Vladimir Maximov, *Porshchanie iz niotkuda*. Frankfurt am Main: Possev Verlag, 1974; *Farewell from Nowhere*. Translated by Michael Glenny. New York: Doubleday and Co., 1979. (The author emigrated from the USSR in April, 1974, after publication of his novel in the West.)

Sasha Sokolov, *Shkola dlia durakov.* Ann Arbor: Ardis, 1976; *School for Fools.* Translated by Carl R. Proffer. Ann Arbor: Ardis, 1977. (The author emigrated in 1980.)

Georgi Vladimov, *Ernyi Ruslan.* Frankfurt-on-Main, Possev Verlag, 1975; *Faithful Ruslan.* Translated by Michael Glenny. New York: Simon and Schuster, 1979. (The author requested to emigrate in February, 1983.)

Vladimir Nikolaevich Voinovich, *Pretendent na Prestol.* Paris: YMCA, 1979; *Pretender to the Throne.* Translated by Richard Lourie. New York: Farrar Straus Giroux, 1981. (The author emigrated in December, 1980.)

Alexander Zinoviev, *Svetloe budushcee.* Lausanne: L'Age d'Homme, 1978; *The Bright Future.* Translated by Gordon, Clough. New York: Random House, 1960. (The author was expelled due to publication in April, 1978.)

The Gosizdat (Published by the Soviet Government) Writers: Plot and Main Characters

Chingiz Aitmatov's novel was concerned with the traditions of his native area and the role of adolescents during the time of the Great Patriotic War (World War II in the USSR). In *The Cranes Fly Early*, the Kirgiz writer told about a distant Kirgiz village in the war years of 1941-45. All capable of bearing arms had left for the front leaving only the elderly, women and children. Teenagers found themselves faced with the need to do men's work; for the first time they were called upon to carry out the spring ploughing and sowing under difficult wartime conditions. This was the story of how they coped, of their maturing in the process and of first love.

Sultanmurat was the protagonist of the novel and was endowed with all the virtues and shortcomings of a 15 year-old who had been given responsibilities beyond his age during the Great Patriotic War. At times, he was short-tempered with his younger brother, showed intense jealousy of his newly found love, Myrzagul, and behaved recklessly in a horse race with his competitor, Anatai, for recognition and leadership. Added to this, he showed poor judgment in pursuing thieves who had stolen the plough horses, which ended in tragedy when his cherished horse, Chabdar, was killed.

The major themes of Astafiev's novel, *Queen Fish*, represented a portrait of the hardships of life in Siberia and the effects of recent incursions on nature by modernisation and development of the natural resources. New construction projects, the penetration of the vastness of the hinterland by helicopter and the uprootedness of the lives of the people of the North were graphically revealed in this novel. The problems of environmental destruction, corruption of poachers and alcoholism, as well as the simplicity and veracity of native tradition were depicted through a multitude of colourful characters.

Astafiev's narrator was a professional writer whose trips to his native Siberia were most often made for funerals. His younger brother Nikolai Petrovich (Kolya) eked out a living hunting polar fox in the tundra and tried to care for a family his alcoholic father could not support. Another protagonist was Akim, a friend of Kolya's who had been reared on the banks of the Yenisei in the settlement of Boganida, where hunger drove him annually into the tundra in search of food. He had not been baptised, nor was there a record anywhere of his birth. He knew he was the son of a Russian who had made a few roubles in the North, then disappeared, and a mother whose children were fathered by "the fisherman."

Victor Astafiev's use of satire made some of the most gross revelations palatable and alcoholics humourous, even to be pitied. His ending was equivocal. He noted that while all these technological changes had brought about the destruction of some good things in life, other profitable outcomes were gained. Astafiev's narrator asked: "So what have I been seeking? Why torment myself? Why? Why? No answer for me." (Astafiev, 1982:444)

Yuri Bondarev's *The Choice* took place during the 1970's and focussed on the lives of two men: a well-known artist, Vladimir Alexeyevich Vasilyev and his childhood friend, Ilya Petrovich Ramzin, who vanished in the Ukraine in 1943 after a night battle. Ilya became a German POW who made the choice to stay in Germany and become a businessman. Both men were born and reared in Moscow, lived in the same apartment block, studied in the same class and volunteered for the army together when the war broke out, serving in the same unit. Both were romantically involved with a childhood friend, Maria, who later married Vasilyev when Ilya Ramzin failed to return from the war. On a visit to Moscow, Ilya ended his life, begging forgiveness for his sins. This act was the result of a desire to be buried in his native land. (The interpretation of a Soviet citizen who saw the play in Odessa was that Ilya committed suicide because he wanted to be buried in his native land.) Bondarev's novel presented deep insights into psychological problems through the discussion of the characters, touching on sensitive issues of Soviet society and communist morality. The novel was very popular in the Soviet Union, and Bondarev was attacked by official literary critics ("Nayti Geroy" [Hero Discovered], *Komsomolskaya Pravda*, 22 June, 1985:2).

The Shore of Love centred around Kolkhoz life and an eccentric sailmaker who was forced to retire to his native Ukrainian village of Kurayevka on the Black Sea. The Ukrainian novelist Oles Honchar's story told much about workers' lives, Kolkhoz village life and that of seafaring men. The protagonist was Andron Gurievich Yagnich, who had been declared medically unsound for further duty on the Orion at sea. His relationships with his family, the villagers and their children, gave insights into a noble, but at times cantankerous character, and his love of life. Inna, Yagnich's niece, was a nurse just entering the collective farm life. She met her challenges with courage and her emotional life with mature analysis. In addition to giving herself over to her socialist duty as a nurse, Inna had poetic talents and deep feeling for her native land. The negative character of the novel, Inna's boyfriend, Victor, caused a great deal of difficulty with family and friends, through his delinquent behaviour. His suicide was an unusual solution to problems in a socialist society.

The setting of Korneshov's novel, *A Brush With Hate*, began on May 9, 1945, when armed bands of Ukrainian nationalists continued to fight on in an effort to prevent the re-establishment of the Soviet government, receiving aid from Central Headquarters of the Organisation of Ukrainian Nationalists (OUN) established in Munich, supported by the American military. According to the author, the OUN was set up by Ukrainian traitors to wage a war on the Soviet Ukraine. The organisation collaborated with the Nazi invaders and carried out bloody raids under Nazi Germany's intelligence service (Abwehr), its longtime paymaster. After the defeat of Nazi Germany, the ringleaders of the OUN scuttled to the West, and at the instigation of imperialist intelligence, tried to start a terrorist war against the Ukrainian people. The Ukrainian Insurgent Army (the UIA) was the bandit armed gangs formed and equipped by the Abwehr in Nazi occupied areas of the Western Ukraine. They carried on their battle after the Nazi retreat. In the course of an uncompromising class struggle, Communists, Komsomols and the NKVD joined forces to defend the interests of the people and wipe out the reactionary organisation set up by Ukrainian nationalists, who had betrayed their own people. *A Brush With Hate* was the story of a major NKVD operation that was carried out in the Western Ukraine.

Korneshov was a well-known writer of detective novels in the Soviet Union, and his novel followed the pattern of a mystery story. There were over 30 characters in the novel, most of whom had aliases, and it was not revealed until the end of the novel that the main character was Maria Shevchuk (alias Ganna, Galya, Zoryana, Gorlinka, Podolyanka, Mavka), who was a Captain of the State Security Service. Early in the story, she was switched by the NKVD for the OUN courier, Zlata Guliyaiviter, who had been arrested while on a mission to the Ukraine to set up a radio station. Maria completed her mission successfully, and the Ukrainian nationalists were forced to cease their operations.

The Territory was actually Chukotka, a remote peninsula in the far northeast of the Soviet Union, and the plot of Oleg Kuvayev's story told of the search for commercial gold, so necessary for the country's future, against the officially recognised view that there was no gold there. The only man with a firm belief of its existence was Chief Engineer Chinkov, the Administration's Chief Engineer. His belief was based on knowledge, experience and intuition. Chinkov gradually won over supporters, in many cases through devious and underhanded means, and the success of the expedition turned out to be the result of a sustained effort by the work collective with a deep understanding of the social significance of their work. Chinkov was regarded as an adventurer and careerist by those who attempted to block his efforts, specifically his immediate superior, Robykin, who also was motivated by the interests of the state. While *The Territory* was a fictional account of the discovery of gold, its main theme was intended to "praise the creativity and strength of the human spirit . . . and dedication to one's work." (Kuvayev, 1975:6-9) Much of Cinkov's success depended on the surveyor, Sergei Alexandrovich Baklakov, who not only welcomed challenges, but had the natural intuition needed for successful prospecting. A man's value depended on his ability to live in a group and his dedication to the idea that work was the only worthwhile value. The conflicts in the novel were not over production decisions, but in the moral sphere as well, and the author conveyed the notion that those who succeeded were not reprimanded for their unorthodox methods for accomplishing a task. The novel was rich in portraits of native traditions and descriptions of the hard life of the Far North.

I. Lazutin's novel, *Through Thorns to the Stars*, told the story of the dreams of a young girl, Svetlana Karetnikova, who wanted to become an actress: her frustrations and fears and how she found herself and the meaning of life through her work in a factory. Svetlana's Aunt Kapitolina misguided her in the pursuits toward a career by arranging a meeting with a famous film director, whose amorous advances nearly led to disaster. The main protagonist who rescued her was Svetlana's grandfather, Pyotr Karetnikov, a former revolutionary and a worker (from generations of workers), who guided her with his wisdom. Volodya Putintsev, Svetlana Karetnikova's boyfriend, was a promising talented film actor, who was also listed on the Board of Honour at his factory. Volodya overcame his intense jealousy of Svetlana's acting career, and they later married. Kornei Brilev, director of the factory Cultural Club and confirmed alcoholic, found a cure for his addiction with the help of the Communist Party Secretary.

Skujins' novel, *A Man in His Prime*, addressed the social issues of Soviet society in the Republic of Latvia, and in particular, the life style of the scientific intelligentsia. Skujins satirised the topic of the Soviet middle aged man in crisis, against the background of production problems in industry of communications. Many modern day issues, such as problems with women office workers, attitudes toward divorce and adultery, were addressed.

The protagonist, Alfreds Turlava, was a 47 year old design engineer for telecommunications, who was acutely aware of his middle age crisis. He became involved in a love quadrangle. His dilemma was satirised in an insightful way, as he attempted to juggle his professional career, which was fraught with problems of obtaining approval for innovations and meeting production plans, with his family life and his mistress, whose youth kept him marching at a fast pace. Alfreds wanted a son to carry on his name, and he was elated to find out that his mistress was pregnant, but he later discovered that he was not the father. Alfreds Turlavs' wife, also a worker, had been married to him for 20 years. Alfreds decided to divorce her, just at the time of their daughter's wedding, and the divorce was a tragedy for his wife. Vita, the daughter, was a worker in a physics institute and had her own plans for her life. She took an exceptionally mature approach to her life under the circumstances of her parents' pending divorce. Skujins' philosophical message on the nature of divorce was equivocal. His protagonist asked who was to decide what was moral and gave no clear cut answer.

The major theme of *His Name Was Not Mentioned* was the Great Patriotic War and the heroic efforts of one young officer to defend the motherland from the Nazi invaders at Fort Brest. Boris Vassilyev's novel, based on a true story, described the Soviet fortress farthest west, which was reduced to ruins in the first hours of the Nazi invasion. The 19 year old Lieutenant Nikolai Petrovich (Kolya) Pluzhnikov arrived in Brest on the last peaceful night in June, 1941. His name had not yet been put on the muster roll of the garrison, but he took up his position and fought to the last. The German armies overran it and marched ahead, continuing their invasion and capturing one city after another, but the Brest Fortress was in the rear and had not surrendered, holding out four months to the last man. Vassilyev conveyed the disillusionment of the trapped Soviet defenders, who waited for reinforcements which never came, and the recriminations of a leadership so ill prepared for the disaster.

The young lieutenant discovered the law of warfare, which was as simple and inevitable as death: that if you were alive, then someone else died for you. His first trials at leadership were filled with many mistakes due to inexperience and, at times, a vain ego, but his noble death made him a truly heroic figure, a tribute to which a monument was erected at Brest in memory of this "unnamed hero."

Nikolai Pavlovich Voronov's novel, *The Crest of the Summer*, was concerned with the problems of a major production in a generating plant during the Great Patriotic War, and a post war metallurgical plant in the town of Yellow Water Lilies. The difficulties encountered by innovations due to the technological revolution, both in management of the plant and the effect it had on workers' lives, was the focus of the author's plot. The challenges of meeting production plans, problems of working conditions and environmental concerns were the primary issues.

The major characters were Inna Savina, Anton Gotovtsev and Marat Kasyanov, who were classmates during their school years in the town of Aheleznodolsk and who formed a romantic triangle in which Marat and Anton vied for Inna's favours. Inna was a self-centred girl whose family had been evaculated from Leningrad and who later became an investigative reporter for a Moscow newspaer. Anton and Marat both worked at the local power generating plant while attending school and later became associated in the turmoil of the metallurgical plant in Yellow Water Lilies, where Marat became director and Anton was the innovator of a new machine, a cause of much turmoil in its development. The three of them came together when Inna Savina was sent to investigate the troubles surrounding the plant. The conflicts of this novel were not only associated with technological innovations, but the moral and psychological conflicts in the resolution of such problems.

The Tamizdat (Published Outside the USSR Without Soviet Government Authorisation) Writers: Plot and Main Characters

Fazil Iskander's *Sandro of Chegem* covered the 80 year story of Uncle Sandro from the 1880's to the 1960's through his nephew, a newspaperman who narrated the story. Iskander made ironic mockery of ethnic groups, which he considered the most peaceful form of ethnic prejudice. His story about the patriarchal village life of Abkhazia, in the Transcaucasus, was real, except the names, Kenguria and Enduria, and their central cities, Kengursk and Endursk. The latter name derived from the Russian root 'dur-', meaning fool. Mukhus was an anagram for Sukhum, the capital of Abkhazia. Iskander admitted to idealising a vanishing way of life, and in so doing, he presented a bill for the future.

Uncle Sandro was a famous tamada (toastmaster) in his day, very popular in his community, and he "walked through life trying to ornament festive tables." (Iskander, p. 263) From time to time, he was a watchover, meaning leader. Uncle Sandro belonged to the Abkhaz Dance Ensemble during the time of Stalinist Terror, and in a willy nilly fashion, managed to survive the destruction of that period. Uncle Sandro's father, Khabug, was considered the most prosperous man in the village; with a patriarchal family of many sons, he had built up a fortune. Then the wave of collectivisation rolled over the mountain village of Chegem in the early 1930's. Through the narrator, Blackamoor, Khabug's mule, the tragic story of that era was unfolded in a satiric manner. The author presented a way of life and national tradition, that in many ways, lived around and continued during the major upheavals in distant Russia.

Vladimir Maximov's novel, *Farewell from Nowhere*, was the story of the young boy, Vlad Samsonov, whose father was a political prisoner, later drafted and killed in the 1940's war, and whose mother died through a train accident. Vlad was devoted to his maternal grandfather, Saviely Anifrievich Mikhailyev, a long time revolutionary and railroad worker, and patriarch of a large clan, filled with political animosities. The love of this grandfather and his support and understanding of the youth, formed a bond he remembered throughout his lifetime. The animosity of the mother for the young boy caused him to run away from home, and his vagabond life portrayed the corruption of Soviet society and law. Because the youth was a talented writer, he was given an opportunity for schooling at the Kolkhoz and in the reformatory. At various times, he held positions on the provincial newspaper, Cultural Museum, and he was a representative to a Writer's Conference for his Kolkhoz. His sister, Katya, and her family emigrated to Israel, where her letters revealed the difficulties of life in emigration.

Sasha Sokolov's novel, *A School for Fools*, portrayed a schizophrenic student attending a school for the mentally retarded, located in the country where residents maintained summer dachas. The schizophrenic's father was a prosecutor who detested the geography teacher, Norvegov. This teacher was a mentor to the boy, and he was loved by all the "special students." The teacher was an idealist who hated the way the school and society were run. The schizophrenic's questions in the classroom and to his dictatorial father, revealed much about the bureaucratic nature of life, which so perplexed the disturbed boy. The questions were quite sensible, though the answers were not. The beloved teacher, Norvegov, died, and all mourned his passing, even the principal of the school, who tried to get rid of him. Much of the narration was achieved through the hallucinations of of the schizophrenic, who referred to himself as "we" and argued with his other self. Time and names had no meaning, and occurrences could either be in the past or future; it was not an important matter. The schizophrenic fell in love with his science teacher, Veta Arcadievna, who was much older, and he fantasised their relationship. The final note was the author and the schizophrenic going to the store to buy more paper, so the author could continue the stories which the schizophrenic wanted to relate to him.

Folk tales about animals who talk and think like human beings occur all over the world, and they can involve social satire or criticism. This kind of story was especially useful to Soviet writers as a way of expressing resentment, which otherwise could not be revealed. Georgi Vladimov's novel, *Faithful Ruslan: The Story of a Guard Dog*, was one such literary creation. The setting for the novel was the period of 1956-57, with Khruschev's order for demobilisation of Stalinist labour camps. Ruslan's Master was about to destroy the guard dogs which could not be retrained, but let them go, instead. Ruslan was ordered by his Master to leave down the road, and he spent the rest of his short life waiting for the return of prisoners.

In the village where the dogs gathered, Ruslan again discovered his Master, in a restaurant talking with Shabby Man, a former inmate. His Master treated Ruslan cruelly in order to get him to leave and build another life, but the experience was a bitter disillusionment for the faithful dog. Shabby Man found Ruslan and took him home; the old ex-inmate needed a companion, and Ruslan had himself a prisoner to guard. Ruslan met the trains every day, and he was ecstatic when a load of workers arrived. He and the other guard dogs converged on the column to escort them to the camp. They took up their positions and jogged down the road, but Ruslan never reached the end. Tragedy struck when two dogs attacked a worker for getting out of line. Ruslan returned to the end of the column to restore order. As he arrived, the dogs were leaving, and the workers commenced to attack the dogs. Only Ruslan did not give up. He did his duty to the end, and he died in disillusionment that he should be so ill treated merely for doing his duty. Through the consciousness of the canine, Vladimov had shown the "spiritual tragedy of modern Russia: of the Great Revolution, the New Deal that inspired such high hopes . . . and which guttered down to become nothing but the old tyranny in another -- even a worse -- form." (Vladimov, pp. 8-9)

Pretender to the Throne: The Further Adventures of Private Ivan Chonkin was a sequel to Vladimir Voinovich's novel, *The Life and*

Extraordinary Adventures of Private Ivan Chonkin. The work was intended to be a trilogy describing the Great Patriotic War period in the Soviet Union, especially the behaviour of Soviet bureaucracy, as well as the fate of innocent individuals who became its victims. In the first novel, Chonkin stayed at his post and defended a plane which had a forced landing in Krasnoye, where the Army forgot about him. He was living with Nyura, the unmarried village postal carrier, at the time of the German invasion. Then the NKVD was sent to arrest him as a deserter, but he and Nyura defended the plane, according to orders, and disarmed the detachment, as well as the local NKVD chief himself. Chonkin was first decorated for valour for withstanding the attack, then arrested for desertion. At this point, Voinovich continued the narrative with *Pretender to the Throne.* It was discovered in Chonkin's native village that he was the illegitimate child of Prince Golitsyn, and the charges of desertion escalated into international conspiracy. Hitler was informed by head of the Abwehr, Canaris, that Prince Golitsyn had been arrested by the Soviet authorities, and he ordered German tanks away from Moscow to rescue Golitsyn. Stalin was informed by General Dobrenky that Chonkin was a peasant hero for having stayed by his post as ordered and capturing a detachment of Soviet soldiers sent to arrest him. Stalin ordered Chonkin released. Fiascoes of the KGB were related in the execution of Captain Milyaga for the Chonkin debacle, and then a public mock funeral was held to "rehabilitate the image of the Right People." The captain was buried as a hero. The KGB was ordered to find the German spy, "Hans," who was immediately linked to the international conspiracy of Chonkin. Lieutenant Filippov replaced the executed Captain Milyaga and immediately became linked with Chonkin's so called conspiracy. Fedot Figurin replaced Filippov and very soon became involved in a love affair with the office secretary, later to be revealed as the German spy "Hans." Bunglings of bureaucracy were satirised, such as the case of a Kolkhoz chairman's arrest for not delivering goods to an area which had been evacuated and in which he was the sole occupant. Another instance was a school teacher who received a reprimand for a remark he made when the Germans invaded and suffered a heart attack during the reprimand. The local Communist Party Secretary, who had been delivering the reprimand, was removed. A third case was the alcoholic Prosecutor, Evpraksein, who committed suicide because his conscience overcame him for convicting innocent people.

Voinovich did not make Private Chonkin a leading character in the novel. Indeed, Chonkin was in prison the whole time of the story. Chonkin was an easy going man and not inclined to high principled declarations. He was unfailingly loyal, conscientious and devoted to Stalin. In his devotion, he revealed the true workings of the bureaucracy under Stalin and achieved his own personal victories over it.

Alexander Zinoviev's, *The Radiant Future*, portrayed the struggles of an esteemed Marxist theoretician who wanted to become a member of the Academy of Sciences, the highest Soviet cultural body. He seemed to have all the necessary qualifications, but he had one fault. He was a liberal, and he claimed to have built his career by seriously studying Marx and examining the ideology in detail, rather than repeating slogans. Zinoviev's narrator was the Head of the Department of Theoretical Problems of Methodology of Scientific Communism. Through discussions with the Head's close friend, the former political prisoner Anton Zimin, the philosophy of Marx and Soviet society were denigrated.

Intellectual discussions and political arguments took place at the narrator's home and at "The Dive," a local drinking hang-out. Here Zinoviev's narrator met with Anton, Nameless (who later proved to be a physicist) and some of his colleagues from his Institute, all of whom suspected each other of being informers. In his struggle for advancement, the narrator came into conflict with Academic and Party bureaucracy in the form of Tvarzhinskaya, Director of the Department of Scientific Communism, Vladilen Makarovich Eropkin, Director of the Party Institute, Vaskin, from the Higher Party School, and Kanareikin, Director of the Institute. Zinoviev's narrator did not receive his cherished promotion; his daughter committed suicide as the result of a discovery she made about her father; his wife divorced him; he was dismissed from his job at the Institute; and he was expelled from the Communist Party. Zinoviev's thesis was that people become dissidents, even against their will.

Criteria for Analysis of the Novels

A content analysis of the novels was made on the basis of a number of criteria derived from two sources: (1) Soviet constitutional guarantees and (2) standards for writing as specified by the Secretary of the USSR Writer's Union in 1977 (Markov, 1977).

Articles of the Constitution of the USSR which were relevant to the content analysis of the novels included the following:

> Article 40. Citizens are guaranteed the right to employment and pay in "accordance with the quantity and quality of their work, and not below the state-established minimum, including the right to choose their trade, type of job and work in accordance with their inclinations, abilities, training and education, with due account with the needs of society. This right is ensured by the socialist economic system . . . free vocational and professional training, improvement of skills, training in new trades . . . development of the systems of vocational guidance and job placement." (Report, 1977:12)
>
> Article 41. Citizens have the right to rest and leisure. "This right is ensured by the establishment of a working week not exceeding 41 hours . . . . by the provision of paid annual holidays, weekly days of rest, extension of the network of cultural, educational and healthy . . . institutions, and the development . . . of sport, physical culture, and camping and tourism,

by the provision of neighbourhood recreational facilities . . . and other opportunities for rational use of free time." (Report, 1977:18)

Article 42. Citizens have the right to health protection. "This right is ensured by free, qualified medical care provided by state health institutions; by the development . . . of safety and hygiene in industry, by carrying out broad prophylactic measures; by . . . [improvement] of the environment; by special care for the health of the rising generation, including prohibition of child labour, excluding the work done by children as part of the school curriculum . . . ." (Report, 1977:18)

Article 43. Citizens have the "right to maintenance in old age, in sickness, and . . . disability. This right is guaranteed by social insurance of workers . . . by the provisions by the state or by collective farms of retirement pensions . . . by providing employment for the partially disabled; by care for the elderly and the disabled; and by other forms of social security." (Report, 1977;18)

Article 44. "Citizens of the USSR have the right to housing. This right is ensured by the development and upkeep of state and socially-owned housing; by assistance for cooperative and individual house building; by fair distribution, under public control, of the housing that becomes available . . . . Citizens of the USSR shall take good care of the housing allocated to them." (Report, 1977:18)

Article 45. Citizens have a right to education. "This right is ensured by free provision of all forms of education, by the institution of universal, compulsory secondary education and . . . development of vocational specialised secondary and higher education . . . development of extramural correspondence and evening courses; by the provision of state scholarships and grants . . . by the issue of free textbooks; by the opportunity to attend a school where teaching is in the native language . . ." (Report, 1977:18)

Article 46. "Citizens have the right to enjoy cultural benefits . . . by developing television and radio broadcasting and the publishing of books, newspapers and periodicals, and by extending the free library service; and by expanding cultural exchange with other countries." (Report, 1977:19)

Article 50. "Exercise of . . . political freedoms is ensured by . . . broad disseminaiton of information, and by the opportunity to use the press, television and radio." (Report, 1977:19)

Article 52. "Citizens . . . are guaranteed freedom of conscience . . . the right to profess or not to profess any religion, and to conduct religious worship or atheistic propaganda. Incitement

> of hostility or hatred on religious grounds is prohibited. In the USSR, the church is separated from the state, and the school from the church." (Report, 1977:19)
>
> Article 57. Respect for the individual and protection of the rights and freedoms of citizens "are the duty of all state bodies, public organisations and officials. Citizens of the USSR have the right to protection by the courts against encroachments on their honour and reputation, life and health, and personal freedom and property." (Report, 1977:18)
>
> Article 61."Citizens are obliged to preserve . . . socialist property. It is the duty of a citizen of the USSR to combat misappropriation and squandering of state and socially-owned property and to make thrifty use of the people's wealth." (Report, 1977:20)
>
> Article 65. "A citizen of the USSR is obliged to . . . be uncompromising toward anti-social behaviour and to help maintain public order." (Report, 1977:20)

Standards for writers in the USSR to follow in the late 1970's were specified in a speech by Georgiv Markov, Hero of Socialist Labor and Secretary of the USSR Writers' Union. The title of his speech was "Talent and Inspiration for the People," and it was published in *Literaturnaya Gazeta*, 29 June, 1977. He wrote that the preamble to the draft constitution addressed the increasingly favourable conditions for the comprehensive development of the individual and higher organisations, moral constitution and consciousness of Soviet working people, patriots and internationalists. The right to work, free medical assistance, leisure, free education and housing guaranteed by the constitution produced considerable changes in both the Soviet citizens' way of life and in their spiritual growth. It was the task of Soviet literature to show these changes: the moral improvement in people of contemporary times; the changes which the contemporary worker, peasant and intellectual had undergone (Markov, 1977:25-27).

The initial categories for analysis of the novels were derived from the literary criteria as specified by Markov's speech. Other categories were added as they appeared in the novels, thus the category of "rights and duties of citizens" (from Articles 59-69 of the USSR Constitution) was added as it appeared in the novels, even though Markov had not mentioned this area of Constitutional Guarantees in his 1977 speech.

What was left out of Soviet literary criteria by Communist Party officials, but was included by Soviet writers and allowed to remain by the government censors was often significantly revealing of the trend of Soviet literature for moral education.

The final set of categories used for the content analysis of the novels was as follows:

- (a) housing
- (b) medical assistance
- (c) right to employment
- (d) leisure
- (e) free education
- (f) retirement (pension)
- (g) rights and duties of the citizens
  - (g1) freedom of information (newspaper, television, foreign literature, foreign films, foreign broadcasts)
  - (g2) freedom of research
  - (g3) availability and control of publications
  - (g4) freedom of opinion
  - (g5) academic freedom
  - (g6) right to privacy
  - (g7) informers
  - (g8) enemy of the people

In addition to the 7 major categories and the 8 subcategories, the content analysis of the novels applied the categories of social realism, critical realism and dissidence to classify the novelists' method of writing.

Brown (p. 15) has stated that the official obligatory style of Soviet literature under Stalin was "socialist realism." Much intellectual effort has been spent in searching for the meaning of this term. Realism in art was equated with materialism in the philosophy of the late 1920's, and it received official sanction as the correct view for Marxist writers. The kind of realism that should be cultivated remained a problem. Psychological realism seemed to lead into the acceptance of individual psychology. Objective realism sometimes revealed negative aspects of Soviet life which were not regarded as typical. Critical realism exposed the faults of society, but affirmed nothing. Naturalism, a view related to realism, focussed on biological rather than social factors in human development. The "dialectical materialist method" in realism, supported by the Association of Proletariat Writers (RAPP), was both vague and doctrinaire.

The qualification of the term 'realism' by the term 'socialist' is attributed to Stalin, and the term 'socialist realism' came into use in 1932. Since the term 'socialist' had a generally positive connotation, but dubious meaning as applied to literature, the meaning of 'socialist realism' could be worked out in practice and by official pronouncements so that it would mean whatever the going authority said that it was. The incorrigible individualists either fell silent or emigrated. Production of literature tended to become a disciplined effort whose social purposes far transcended the individual human being. Writers were regarded as "engineers of the soul," and after 1946, when Andrei Zhdanov, a political leader close to Stalin, became the Communist Party spokesman in literature, he and his lieutenants expressed the demand for tendentious works in crude, direct terms. The abuse of deviant writers reached incredible harshness.

Official Soviet critics have regarded modernist departures from verisimilitude as dehumanising and as evidence of bourgeois decadence. Literature under Stalin presented a striking contrast to literature in the West as well as to the innovative form and content of Russian modernism. The frequent notes of individualism and pessimism in contemporary Western writing and its concern with sex, perversion, violence and absurdity are treated in the USSR as an index of the decline of a civilisation. Writers under Stalin and Zhdanov were obliged to adopt procedures quite different from those that appeared dominant in the West. They had the obligation to "reflect reality in its revolutionary development" (Brown, p. 16), to operate only with universally intelligible language and literary forms and to present positive heroes and optimistic themes.

Khruschev declared that

> The strength of Soviet literature, the most advanced in the world, is that it is a literature for which there can be no other interests than those of the people and the state. (Khruschev, 1957)

According to the Communist Party,

> Literature and art are part of the whole people's struggle for Communism . . . . The highest social destiny of art and literature is to mobilise the people to the struggle for new advances in the building of Communism. (Decree, 1946:40)

Works produced by socialist realists varied in style and content, but in all of them the purpose was to present descriptions of life "in its revolutionary development." (Khruschev, 1957:40)

From the Soviet point of view, Pospelov (p. 57) explained, the term 'creative or artistic method' was first introduced into Soviet literary theory by members of RAPP (the Association of Proletariat Writers) in 1929-31. They borrowed the term 'method' from the history of philosophy. Striving to affirm the guiding and dominant significance of "proletarian literature," they proclaimed the "creative method" of this literature to be "dialectical materialism." In order to give their generalisations greater basis, they applied them to the entire world history of literature, in which they identified two principal "creative methods" -- realism and romanticism. They held that realism developed from a materialist's worldview and romanticism, from an idealist's worldview. This subordination of the principles of artistic creativity to the principles of philosophy was eventually regarded as "false to the point of naivete," (Pospelov, p. 57), and it became decisively refuted after the dissolving of the RAPP and other literary groupings. Realism, however, long remained in the minds of Soviet critics and literary scholars as one of the "creative methods" of world literature, and as the most progressive and significant among them. (Pospelov, p. 57)

Previously realism had been regarded as a literary "school" which replaced the romantic "school," but understood as a "method," realism turned out to be something considerably broader and more universal. As a "method," it could be discovered not only in works of the realist "school," but in those of other "schools" and other historical periods, even in works created before any "schools.". As the ideological needs of Soviet critics changed, their theoretical concepts changed accordingly. In the mid-1930's, the very important and fruitful idea of the national significance of imaginative literature was advanced by critics. Imaginative literature as an art form was replaced by the ideological-emotional generalisation of life, producing a unity of two different functions -- the cognitive and the ideological-educational, each having its "value" significance for society. Therefore, for literary scholarship and criticism, it was necessary to have a criterion for evaluation of both of these social-value aspects of the content of literary works, with corresponding sets of terms to denote them and to differentiate them. Works which have any depth in dealing with their themes thus have cognitive value. But, at the same time, they obtain and retain their value for society only when their ideological-emotional bent is historically valid. (Pospelov, p. 57)

The First Congress of Soviet Writers recognised that realism had acquired new properties which distinguished it from the realism of classic 19th century literature. The awareness of these differences led to the creation of two new concepts: "critical realism" and "socialist realism," both of which had typological meaning. New and even greater difficulties in the system of concepts and terms in Soviet literary scholarship arose in the second half of the 1950's, when the concept of "creative method" radically changed in content under Khruschev. (Pospelov, pp. 58-62)

In the collective work, *A History of Russian Soviet Literature* (1959), it was stated that

> The concept 'artistic method' means the unity of ideological and artistic principles by which the writer is guided in his attitude toward reality, in his selection, interpretation, and *representation of the phenomena of life.*

The principles of "attitude" toward life, "selection" and "interpretation" of its phenomena held first place. These three principles applied to the aspects of the content of works -- their themes, the problems they dealt with -- and always depended on their "specific worldview" that was also historically unique. (Pospelov, p. 62)

Debate over the term 'socialist realism' was allowed to continue into the late 1960's, when Yuri Barabash stated that socialist realism was the one and only method of contemporary Soviet literature. He declared the method had many facets, one of which was romanticism. Ovcharenko formulated the answer differently. He emphasised that in socialist literature, romanticism did not contradict its realism. He maintained that

> Socialist literature is truly multifaceted not only in its types

> and genre but also in its principles of reflection of life. Furthermore, the *realistic* principle of reflection of life naturally has the guiding and dominant significance in it. (Pospelov, p. 63)

The controversies caused Max Hayward in "The Decline of Socialist Realism," to write in the early 1970's that the

> meaning and scope of socialist realism have revealed profound differences among the "theorists" about how to deal with current Soviet literature. (Hayward, 1972: 97)

It was clear to him that the conservatives would exclude everything that was not socialist realism. The alternative was to admit the existence of different trends, and the recognition that significant works had been published which qualified as critical realism. Hayward cited Ovcharenko as saying this had been true of such authors as Solzhenitsyn, S. Zalygin, V. Bykov, V. Voinovich and V. Syomin (two of whom left the Soviet Union within the decade), and that he himself considered it a complicated problem. Ovcharenko considered the "quasi official" Statutes of the Union of Writers description of socialist realism as a "basic method" to mean literally that there were *other* methods which could not simply be dismissed.

A plenum of the Union of Writers in February 1972 discussed the need to strengthen "partiinost" (Party-spiritedness) and to develop the "fruitful traditions of socialist realism." (Yagodkin, p. 97) The Moscow Communist Party Secretary Yagodkin in 1976 declared the vital task of the author was to bring every Soviet individual all that was beautifu, heroic and outstanding, which linked patriotism of the Soviet nation with the people. The writers' works should reveal the revolutionary traditions of Soviet society and the culture of the Motherland. He had to show the new generations the majesty of the Soviet people, its genius and its heroism. (Yagodkin, p. 35)

> The soul of the creative method of socialist realism was and remains Communist Party spirit. This principle in no way contradicts the freedom of artistic creativity, but is its expression. It denotes the class direction of the artist's position.
> (Yagodkin, p. 21)

Data Base Management

The data collected from content analysis of the novels were entered into the computer program, Data Base Manager II -- The Integrator (version 2.0). The program enabled comparison of novels in terms of the frequency of appearance in the novels of the 7 major categories and the 8 subcategories. In addition, it enabled calculations of the percentage of social realism in the novel as a method of writing. In rating the method of writing, a percentage was calculated for socialist realism in comparison to the total number of times a theme appeared by using the formula,

$$\text{Percentage of SR} = [SR/(SR+CR+DI)]\,100,$$

in which "SR" meant socialist realism, "CR" meant critical realism and "DI" meant dissidence. Only 13 of the 16 writers in the sample treated the theme of Constitutional Guarantees and Duties of Soviet citizens. Table 1 shows the results of this analysis. The authors marked with an asterix were tamizdat writers.

Author	Socialist Realism	Critical Realism	Dissidence
Astafiev	33%	53%	8%
*Iskander	25%	30%	45%
Korneshov	75%	25%	10%
Kuvayev	39%	61%	0%
Lazutin	88%	12%	0%
*Maximov	0%	60%	40%
Skujins	16%	84%	0%
*Sokolov	0%	65%	35%
*Vladimov	0%	50%	50%
*Voinovich	0%	53%	47%
Voronov	34%	66%	0%
*Zinoviev	0%	21%	79%

Table 1:
Method of Writing by the Novelists in the Treatment of the Theme of Constitutional Gurantees and Duties of Soviet Citizens

In addition, this same set of authors was compared in relation to what degree they adhered to the method of socialist realism in the treatment of 7 major categories (categories a-g) and 8 subcategories (g1-g8). The results of that analysis are shown in Table 2. The first entry in the table, Astafiev, indicates that the author was a gosizdat writer (published in the USSR with Soviet authorisation), that the author treated the theme of housing (a) one time in the novel, that in so doing the author adhered 100 percent to socialist realism. The author treated the theme of free education (e) one time in the novel, and in so doing, the author adhered 100 percent to socialist realism. The author treated the theme of retirement (pension) (f) one time in the novel, and in doing so, the author adhered to socialist realism 100 percent. The author treated the theme of rights and duties of citizens (g) and adhered to socialist realism zero percent in the treatment. Instead, the author used critical realism (=) in the 5 times that the theme of rights and duties of citizens were treated in the novel. The author treated the theme of freedom of information, and in doing so, adhered to socialist

Astafiev: (a)100%, 1+; (e)100%, 1+; (f)100%, 1+; (g)0%, 5=; (g1) 33%, 1+, 1=, 1-; (g3) 0%, 1=. Totals: 33%, 4+, 7=, 1-

*Iskander: (a) 0%, 2=; (b) 0%, 3=, 1-; (e) 80%, 4+, 1-; (f) 100%, 1+; (g1) 0%, 1=, 3-; (g3) 0%, 1-; (g6) 0%, 1-; (g7) 0%, 1-; (g8) 0%, 1-. Totals: 25%, 5+, 6=, 9-

Korneshov: (e) 100%, 2+; (g1) 50%, 1+, 1=. Totals: 75%, 3+, 1=

Kuvayev: (a) 25%, 1+, 3=; (b) 0%, 2=; (d) 0%, 1=; (e) 57%, 4+, 3=; (f) 100%, 1+; (g1) 50%, 1+, 1=; (g6) 0%, 1=. Totals: 39%, 7+, 11

Lazutin: (a) 100%, 3+; (b) 100%, 2+; (d) 100%, 4+; (e) 88%, 7+, 1=; (f) 100%, 1+; (g1) 50%, 1+, 1=; (g3) 75%, 3+, 1=. Totals: 88%, 21+, 3=

*Maximov: (a) 0%, 1=; (e) 0%, 6=; (f) 0%, 3=; (g1) 0%, 2=, 1-; (g3) 0%, 2=, 2-; (g7) 0%, 3=, 6-; (g8) 0%, 1=, 3-. Totals: 0%, 18=, 12-

Skujins: (a) 13%, 1+, 7=; (e) 25%, 2+, 6=; (g1) 0%, 3=. Totals: 16%, 3+, 16=

*Sokolov: (a) 0%, 1=; (b) 0%, 1=, 2-; (e) 0%, 4=, 3-; (f) 0%, 1=; (g1) 0%, 5=, 1-; (g4) 0%, 1=; (g5) 0%, 4=; (g7) 0%, 1=. Totals: 0%, 17=, 9-

*Vladimov: (e) 0%, 1=; (f) 0%, 1=; (g) 0%, 1-; (g1) 0%, 1=; (g4) 0%, 1-; (g7) 0%, 1-. Totals: 0%, 3=, 3-

*Voinovich: (a) 0%, 2=; (e) 0%, 2=; (g) 0%, 1=; (g1) 0%, 2=, 3-; (g6) 0%, 1-; (g7) 0%, 2=, 3-; (g8) 0%, 1=, 2-. Totals: 0%, 10=, 9-

Voronov: (a) 18%, 2+, 9=; (b) 100%, 1+; (d) 50%, 1+, 1=; (e) 43%, 3+, 4=; (f) 100%, 1=; (g1) 40%, 2+, 3=; (g3) 50%, 1+, 1=; (g4) 0%, 2=; (g6) 0%, 1=; (g7) 0%, 2=. Totals: 34%, 11+, 21=

*Zinoviev: (a) 0%, 2=, 1-; (b) 0%, 2-; (d) 0%, 1=; (e) 0%, 2=, 5-; (f) 0%, 1-; (g) 0%, 6-; (g1) 0%, 9-; (g2) 0%, 4-; (g3) 0%, 4=, 12-; (g4) 0%, 1-; (g5) 0%, 4=, 9-; (g7) 0%, 3=, 6-; (g8) 0%, 1-. Totals: 0%, 15=, 57-

Key to Symbols: Percentages indicate degree of adherence to socialist realism
Letters indicate categories for analysis (cf. p. 30)
Numbers indicate number of times the author treated the category
"+" indicates a socialist realism treatment
"=" indicates a critical realism treatment
"-" indicates a dissidence treatment
"*" indicates tamizdat authors

Table 2
Degree of Adherence to Socialist Realism in the Treatment of Constitutional Guarantees and Duties of Soviet Citizens in Novels of Gosizdat and Tamizdat Authors

realism 33 percent of the time. In the author's treatment of the theme of freedom of information (g1), he used the method of socialist realism (+) in one instance, the method of critical realism (=) in a second instance and the method of dissidence (-) in a third. In his treatment of the theme of availability and control of publications (g3), he adhered to socialist realism zero percent, and he used critical realism (=) in his treatment of the theme. The second author, Iskander, is a tamizdat writer, as indicated by the asterix. His adherence to the theme of housing (a) from a socialist realism viewpoint was zero percent. He treated the theme of housing (a) twice in his novel, and he used the method of critical realism (=) in his treatment of the theme.

The content analysis enumerated what one might expect. The gosizdat authors used the method of socialist realism to a high degree in the treatment of Constitutional Guarantees and Rights and Duties of Soviet citizens, and the tamizdat authors did not.

Comparison of Authors

In his treatment of the theme of housing, the gosizdat author, Lazutin, wrote that Marx said man had to have food, clothes and a roof over his head before he could create philosophical, religious or economic doctrines. Astafiev, a gosizdat writer, described sturdy constructions which were put up in the fishing village of Choosh, with kindergartens and free television. Kuvayev, a gosizdat author, told of workers' huts which never thawed out during the summer. A one-roomed hut buried under the debris and steam pipes was the envy of everyone. Furniture was made from grocery boxes. The tamizdat writer, Maximov, wrote of living quarters in the Far North as a bunkhouse with a partitioned corner for the cook and her husband. Skujins, a gosizdat writer, described houses in postwar Riga made by the homeowner which were comfortable and well kept. Families preferred their ancestral areas, such as Kipsala, to the housing developments in Riga. The protagonist in Skujins' novel obtained an apartment for his family by taking care of the homeowner's furnace. The same was true in the novel by the tamizdat writer, Iskander, whose character, Tengiz, obtained a room from Uncle Sandro by agreeing to haul fire wood. The gosizdat author, Voronov, wrote that many people lived in huts, hostels and communal apartments. In his novel, the newspaper investigator, Inna, admired the Siberian huts because the huts indicated family relationships. She stated that people had to take what they were given in concrete buildings. On the other hand, Inna did not see women rushing to live in peasants' huts, and the concrete buildings did not remain empty. If employers did not provide housing, it was necessary to rent whatever space could be found. Plant directors of housing were anxious to satisfy complaints, and they created a new type of barrack which was more like a house. Both sets of authors described the private ownership of housing. The gosizdat writer, Voronov's newspaper woman, Inna, bought a three-roomed cooperative apartment with every modern convenience. The Chugunovs sold their house and waited for the right market before purchasing again. The prosecutor in the novel by the tamizdat writer, Sokolov, sold his dacha, in part, to rid himself of his relatives. Only the tamizdat writer, Zinoviev, described housing for intellectuals, and the five-roomed apartment of his narrator was quite extraordinary. The gosizdat author, Voronov, wrote that some architects rebelled successfully against state planning and created modern, decorative structures. Honchar, a gozisdat author, mentioned in his novel that in some cities there was an insufficiency of water supply, and pipes were constantly under repair. The modern construction worker had house trailers which could be hauled any place at any time. The tamizdat writer, Iskander, described the difficulties of peasants becoming accustomed to city prewar apartment housing. The difficulty was that the housing had no fireplace. During the Great Patriotic War, communal sanitary facilities were mentioned in the novel of the tamizdat author, Voinovich, as being very poor, and even prison cells were made available for rent.

On the theme of medical assistance, the Soviet writers had much the same to write. The gosizdat author, Honchar, told of the battle to obtain hospital beds. The collective farm did not have a hospital. Simple checkups required massive bureaucratic paperwork. At one point in his novel. the outburst of patient frustrated with the bureaucracy was interpreted by the authorities as a sign of senility. The tamizdat writer, Iskander, told in his novel of the bureaucratic mess encountered at a polyclinic. The character, Uncle Sandro, accused the director of the clinic of selling gold to speculators and of promising two extra false teeth merely to meet a production plan, not to serve the interests of the patient. The gosizdat writer, Voronov, described the Outpatients' Department for the plant as a barrack with a strip of tin. The medical practitioner had thousands of patients. In the gosiztat author, Lazutin's, novel, private medical treatment was preferred. A country doctor was described as having a cure for alcoholism. This theme was repeated in Kuvayev's novel (a gosiztat author) in which the character, Mongolov, chose to be treated by an ordinary country doctor. The Deputy Minister also wanted to see a country doctor, and medical treatment was based on a strict system of priorities from the top officials down. The tamizdat writer, Iskander, described in his novel the necessity of having to bribe a doctor from the restricted-access polyclinic to treat Uncle Sandro, and Khabug paid for his grandson's treatment in a tuberculosis sanatorium. Even with the payment, the sanatorium did not help the grandson. Zinoviev, a tamizdat writer, in his novel, described the hospital for academics as one of the best in the country. It was a convenient place to go to solve problems. It was actually intended as a rest place for healthy persons, and there was little treatment given or provided. Sokolov, the tamizdat author, wrote that Soviet medicine was crap. The only illnesses which were not misdiagnosed were the cases of death. In death, there were no mistakes, and the diagnosis was correct. Iskander, the tamizdat writer, depicted the ease with which Aunt Masha gave birth without even a midwife, and thus by implication, how ordinary people could get along well, perhaps even better, than with inept medical care, which seemed to be the only kind available in the Soviet Union.

On the theme of leisure, the gosizdat writers presented a consistent picture of the availability of recreation and holidays. In their novels, they made the point that the Constitution guaranteed everyone a right to rest. It was possible to skip one's annual vacation and collect compensation. Camping and fishing were popular recreations, and workers were scheduled for trips to neighbouring socialist countries. It was possible for a supervisor or manager to cancel a holiday because of demands of production. In contrast, the tamizdat author, Zinoviev, struck a discordant note in his novel by depicting how crowded the holiday beach was, but how in the area for academics, there were only a dozen people.

All of the tamizdat authors and 7 of the gosizdat writers treated the theme of free education. The gosizdat writers described the difficulties of prewar and wartime education when students held full time jobs while attending school, suffered under conditions of near starvation and wore used clothing bought in the bazaars. Voronov, a gosizdat writer, in his novel depicted the attitude of a father who did not believe that his daughter needed an education, but the Aunt maintained the contrary on the basis that one of the family needed to become established in the city in case of famine or a war. The tamizdat writer, Iskander, described the schools opened by the Soviets as a positive step. The characters in his novel had expectations that education would lead to entry into the bureaucracy and to the development of some significant influence over the policies in their region. Some of the characters also expressed the fear that they would have to break with their families to succeed in school and in later life. The school years were remembered as the most enchanting years of life. The character Vlad in the novel by the tamizdat author, Maximov, quit school to take an apprenticeship as a carpenter, then as a bookbinder, then a candy factory worker. He later obtained a release from state farm work, even though there was a shortage of workers, to resume school studies. Alienated from the local population in a Cossack village, he came near to freezing to death while he studied.

On the topic of teachers, the gosizdat writer, Korneshov, described teachers as the most important people on earth. Lazutin, also a gosizdat writer, represented teachers in his novel as people who did not do a very good job of teaching the history of the country. The tamizdat writer, Sokolov, presented a positive view of teachers through the character of the special education teacher in his novel who remained the only cheerful person in the school, even though he was disliked by colleagues, parents and administration. He was devoted to teaching the truth, and he became the students' conscience. The teacher even asked the students not to grieve for him at his death, for there were plenty of qualified teachers in the special school. The special education teacher noted how long it took teachers to come to know their students well when he read a composition by his schizophrenic student. Had he known this student well enough previously, he would have requested the schizophrenic be exempted from memorising the pieces of work which, in their country, was called literature. The author strongly suggested that the schizophrenic, in his madness, had more intelligence and reason than his teachers. Voinovich, a tamizdat writer, in his novel, described teachers as being responsible for the moral foundations of the new socialist man. He depicted in his novel a case in which an entire school was investigated by authorities because of a remark made by one of the teachers. The teacher was subsequently reprimanded and dismissed. The gosizdat writer, Lazutin, in his novel depicted a situation in which a student overcame bureaucratic barriers and succeeded in school. At the examination for entry into a drama institute, one of the examiners on the committee insisted upon an improvisation. This was an unheard of practice. The examiner had expected and intended to fail the applicant, but instead, the student triumphantly passed the improvisation exercise. Along a similar vein, the tamizdat writer, Voinovich told of an institute instructor who refused to permit a student to take the state examination and who eventually suffered dismissal for displaying arrogance toward one of the proletarian cadres. The teacher's weakness was his lack of understanding of dialectics and his inability to comprehend and execute Communist Party doctrine and policy.

Regarding the chances of children in remote locations, the gosizdat writer, Astafiev, noted the importance of education in the taiga (the northern Siberian forests) where children were sent to boarding school on a state allowance. Kuvayev, also a gosizdat writer, told of the children of herdsmen in the tundra who left for boarding school. Few of these children ever returned after completing school. The tamizdat writer, Maximov, mentioned that the children of the chairman of the German settlement were away at a boarding school and his wife worked on a logging team, so he lived as a bachelor. The gosizdat writer, Kuvayev, expressed the notion that professors liked provincials. The provincials received extra grants, and they were well balanced, top students. The tamizdat writer, Zinoviev, wrote that Moscow did not want provincials, and they had little chance of gaining admission to university. Honchar, a gosizdat author, depicted the naval college as easy for a student who had been toughened on a collective farm. Lazutin, also a gosizdat, wrote of the discovery of a young artist of the Far North and how he received assistance and encouragement from a lecturer of the Institute of Culture.

Parents were shown as playing an important part in the education of their children in the novels of both gosizdat and tamizdat writers. The gosizdat writer, Honchar, described the ambitious mother who could not make up her mind whether her son should attend naval college or commercial college. The fishing college, she rejected, because so many Africans received preferential admission there. In his novel, Lazutin, a gosizdat, described Svetlana's concerned father who did not want to take an assignment abroad at a time when his daughter was taking entrance examinations. The mother consulted an authority to find out if her daughter's choice of drama institute was correct for her. The grandfather's advice was to complete her education and gain experience in life. In the gosizdat novel by Skujins, the technocrat expressed pride in his daughter's achievements in mathematics and physics. In an area of study in which few women were admitted and even fewer succeeded, his daughter excelled, and thereby carried on a third generation family tradition. The tamizdat author, Zinoviev, depicted parental concern for influential connections as a necessary condition for securing admission of their children to a reputable institute. In his novel, he dramatised how the directive which prohibited intellectuals' children direct entry from school into higher education was contravened on a regular basis through systematic bribery and corruption. Although theoretically open to all through competitive admission examinations, the Institute of International Relations regularly admitted children from families which occupied the top strata of Soviet society. In another tamizdat novel (by Maximov), the character Vlad was called into the school principal's office and reminded of the saying that an apple never fell far from the tree. This was a clear allusion to his father, who was in a prison camp, and his own prospects in life. Vlad reacted with evasive caution. Vladimov, a tamizdat writer, indicated in his novel that questionnaires on family circumstances for the school records were no longer regarded as being as important as they once were. In the tamizdat writer, Sokolov's novel, the mother of the schizophrenic spoke at her own mother's graveside about how the schizophrenic son was doing better in school. As the son listened, he knew that his mother was not speaking the truth, and he felt that his deceased grandmother was being deceived. The imbeciles would not become engineers. The only thing which they could do was sell postcards or paper flowers by the church. Sokolov, also a tamizdat, mentioned in his novel the practice of single parents paying half the contribution for the education of their children that married parents paid.

The gosizdat writer Skujins emphasised the importance of tutoring. Without it, one had practically no chance of gaining admission to a foreign language institute, and all institutes practised highly selective admission standards. The tamizdat writer Sokolov told how the schizophrenic's mother hired a tutor because she was told her son needed a musical education.

Doctoral dissertations were mentioned by both sets of writers, gosizdat and tamizdat. The gosizdat writer, Lazutin, declared the 1000 page theses, those sent in almost every month by the Supreme Certifying Committee of the Ministry of Higher Education, as wretched and worthless. Uncle Sandro, in the novel by the tamizdat writer Iskander, felt pride in receiving mention in the bibliography a thesis as an eyewitness to the revolutionary period.

Only the gosizdat writer Skujins told of the necessity of part time jobs during the postwar period to supplement a student's allowance of 40 roubles per month. The allowance was insufficient to buy a month's food. Parents helped by giving what they could, and because of their higher salaries, Kolkhoz workers were able to give their children a definite advantage over other students in less fortunate circumstances. Skujins depicted some of the more financially advantaged students as callous and uncaring. They considered their allowances and salaries as supplemental to their parents' support, and they wasted their time in their studies until it was too late to make a successful career. One student returned from his two-year service in the army to complete secondary school, but he found a full time job plus studies at night overwhelmed him, and he could not make the progress that he had hoped for in his studies in preparation for a career. The gosizdat writer Honchar told how a student, who was unable to gain admission to full time higher education, undertook correspondence courses as an alternative. Korneschov (a gomizdat) noted that in the Soviet Union students who studied and maintained employment simultaneously earned much respect, and he also mentioned in his novel the practice of professionals undertaking refresher courses to keep up to date with developments in their fields. Kurayev, a gomizdat writer, cautioned in his novel that those with less than secondary school education found themselves relegated to menial jobs such as handing out bicycles and tents to tourists.

Only the tamizdat writer, Sokolov, treated the theme of special education for abnormal and handicapped children. One of the central characters of his novel was the student schizophrenic. He had been placed in a school in which all sorts of abnormal children had been lumped together: mentally ill, retarded, stutterers, delinquents. Regarding special education for exceptionally talented children, only the tamizdat writer, Zinoviev, alluded to this theme in his treatment of academic education for the children of intellectuals. He described a school in which history was considered all lies. A student who excelled in historical materialism, scientific communism and history of the Communist Party of the Soviet Union was permitted a great deal of freedom in expressing ideas. A school which was privileged, in the sense that it had children from academics, government officials and other bureaucrats, received exemption from devoting as much time as other schools did to considerations of party directives and the doctrines of Marism-Leninism. The school stressed the values of heroism, self denial and disinterestedness, and it glorified the architects of communism.

On the theme of retirement and pensions (theme f, cf. p. 30), both groups of Soviet writers, gomizdat and tamizdat, had much the same to say. It was the right of every citizen to receive a pension upon retirement. Deserving workers from the Far North were attracted to the southern sun after life on the tundra. They created a settlement of former Northern workers on "Arctic Street." Those pensioners who frequented the doctors and social workers unnecessarily received criticism for wasting time and resources. In the novel by Honchar, a gomizdat writer, the character Yagnich did not want to retire. He tried to retain his job on his ship. Even after his retirement, he took various small jobs in his home village, as did his pensioner friends. In the novel by Kuvayev, another gomizdat writer, the prospector Mongolov was due a 6 months leave and then a pension, but he did not want to retire, even though he had made provision through the purchase of a suburban house. In the novel by Voronov, a gomizdat writer, a pensioner worked as director of a museum without pay. In Lazutin's novel (a gomizdat author), the character Pyotr Karetnikov put his heart in his volunteer work with the factory. The tamizdat writer, Maximov, told of Vlad's Grandfather Saviely, a railroad worker who was upset when he reached retirement. He felt that he was worthless. Sokolov, another tamizdat, told of the postman, over 70 years old and a pensioner, who continued to work for a half time salary and distribute the mail. The tamizdat writer, Zinoviev, represented Soviet white collar workers as eager to take up socially useful work after retirement, and they were eager to receive a decent wage for it as well. Pensioners joined all kinds of commissions, committees and volunteer organisations. They waged campaigns against parasites, and they undertook official visits abroad.

The gosizdat writer, Honchar, noted that having a working class classification attracted a better retirement pension. Voronov, a gomizdat, in his novel described the difficulties of middle aged workers who suffered technological dislocation. Their service in one occupation did not entitle them to carry their pension benefits to another occupation. If they were replaced by automation or new technology, they had to learn a new trade and start at the bottom again. The tamizdat writer, Iskander, depicted people in his novel who fabricated records to qualify for pensions. In other cases, pensions were negotiable. The character, Uncle Sandro, petitioned Khruschev for a pension, and Sandro decided that the authorities were not all bad, for they had met him half way in his efforts to secure a pension. In the tamizdat writer Vladimov's novel, the labour camp guard received a top pension which was the equivalent of pensions for arctic airmen. The prosecutor in Sokolov's novel (a tamizdat) received a very high pension, and in the same novel, the school curriculum directoress suffered extreme loneliness in her retirement. Zinoviev, a tamizdat writer, described pensioners as the solid support of Soviet power. He also noted that there was a class of citizens who lost the disposition for work long before retirement. In the novel by the tamizdat writer, Maximov, the character Mrs. Durova in the prewar years lived on a combination of an insufficient pension and part of her son's meager wages.

On the theme of rights and duties of the people, the gosizdat writer, Astafiev, depicted the restrictions on movement through the efforts of the characters, Akim and Petrunya, to obtain their work cards. They wanted to quit their jobs, and they demanded their work cards from their supervisor. He refused them. Another character, Elya's mother, was duped out of a room in her appartment when a provincial writer, knowledgeable in the law, applied for it. He was able to obtain the room because Elya's husband had not renewed his registration in the district. The tamizdat writer, Voinovich, through his character, the Latin Spy, wrote that everybody talked about freedom, but nobody needed it. They were well taken care of in prison, and prison was better than the outside. Zonoviev, a tamizdat writer, communicated through the narrator of his novel that voting was a hypocrisy. If anyone voted against a Communist Party candidate, he would be punished. Zinoviev's character, Dima, wanted to know if mass purges, lack of freedom of speech, restriction on travel were all the norm. The character, Anton, noted that criticism of Marxism was unconstrained in the West, but nothing changed, because it was an ideology, not a science. The need for individuals to be independent of the collective was expressed. In their present condition, however, the masses simply conformed to the collective. Mass repressions had a tendency to get out of control, and the Soviet leadership feared it no less than did the liberal intellectuals. Vladimov, a tamizdat writer, noted that nowhere on earth was there a place in which someone was not keeping someone else behind bars.

Both sets of writers, gosizdat and tamizdat, described freedom of information in the Soviet newspapers in a similar manner, but they drew different conclusions about why information was treated in the way that it was. The gosizdat writer, Korneshov, told how the papers gave no coverage of battles in the Western Ukraine. This was a good thing because people needed a quiet life after a terrible war. Astafiev's protagonist estimated that about 5 percent of what was written was the truth. His correspondent was not oposed to educating people through the newspapers with propaganda. Skujins, also a gosizdat, indicated that deviance in the personal lives of people was no longer of interest to the news media. Voronov, a gosizdat, stated that newspapers supported technological progress and tried to protect the environment, but the papers used bombastic language and covered up the facts. The realities of life were not written about in the papers because it would lead to pessimism. Voronov indicated that the Communist Party had control of the press, and the industrial administrators had much influence over what was printed. Voronov indicated that a reporter needed to be resilient in the face of criticism. Voronov's newspaper correspondent considered her proper role as one of showing the achievements of the country.

Newspapers in the novels of tamizdat authors were depicted as never presenting anything out of the ordinary and at times filled with outright lies. The papers printed the same thing on any public event, and always in overblown language. Sokolov's Prosecutor stated that whatever was needed would be written. Vladimov's dog newspaper was filled with trivia, an analogy with Soviet publishing. Voinovich's editor fled from the news. He was interested only in the number of times the name Stalin appeared. Iskander described how newspapers could not be shown to have made a mistake in reporting. Scientific controversies which might denigrate local traditions or

Soviet policies, such as the equal treatment of women, were hotly debated. Such controversies could cause scientific investigations to be terminated for fear of political repercussions. A sign that good sense was beginning to prevail came when a scholar could state scientific truths as having nothing to do with discrimination against either tradition or Soviet rule. Voinovich depicted the struggle between the Communist Party and Secret Police for control of the press. Maximov's protagonist was impressed with the accuracy of the newspaper when he was a child. As an adult, however, he was told that Stalin said the press was the most deadly weapon the Communist Party possessed. The tamizdat writers indicated that anything that was printed was followed by much speculation on the true meaning of the article, and even a scientific article could be considered as a personal attack. Rumours were considered more reliable than press announcements, unless they were passed along by official sanction. Denunciations were encouraged and rewarded.

Both sets of writers gave a similar view of radio and television. The gosizdat writers' version of local radio news programs was that they were like reports from the labour front. The reports gave the region's most recent achevements. The most interesting television shows were the Olympic Games or the appearance of foreign guests. Especially popular were Fidel Castro and the Soviet Cosmonaut, Yury Gagarin. The tamizdat author, Zinoviev, indicated that television was used by the leadership to hand out decorations to molify dissatisied factory workers. Otherwise, the television covered sports teams or model workers in the industrial and agricultural sectors.

Foreign literature was mentioned by the gosizdat writers, Kuvayev, Astafiev and Lazutin. Interest in English novels was depicted as a bad sign, a show of too much interest in passions from abroad. Gurin in Kuvayev's novel received British, American and German geological magazines, which he shared quietly and inconspicuously. The magazine, *America*, a foreign publication officially sanctioned, was recommended to a young drama student. The tamizdat writer, Sokolov, depicted a railroad worker satirically, when he asked the birth and death dates of a Japanese poet, if these dates were not a secret. Sokolov's Russian language teacher advised against reading Western classics for long periods because they overloaded the imagination. The gosizdat writer, Skujins, mentioned foreign films when his protagonist took a friend to see an Italian movie and when a worker saw a BBC film series in Helsinki on Henry VIII of England. The series contradicted the history which she had read of the period. The tamizdat author, Zinoviev, had his narrator complain that there were no longer foreign films available to view, and even so, all the tickets went to foreigners or to bosses and their friends.

On freedom of research, the gosizdat writer, Honchar, indicated that more needed to be done on the history of Ovid, which had not been thoroughly researched. The tamizdat writer, Zinoviev, mentioned that serious research was needed on the Marxist classification of types of societies; they needed to look at some facts.

Concerning the availability of publications, both sets of writers mentioned well stocked home libraries, and both noted the fear of theft of personal books. The difficulty of obtaining popular publications was also noted by both sets of writers. The tamizdat author, Zinoviev, noted that despite the paper shortage, the speeches of leaders were published in the millions of copies.They were used in political education classes, and no one bought them. Zinoviev's narrator also could read dissident literature legally in secret stacks from the library, and his friend brought back such literature from abroad. Half the town read it.

On control of publications, the gosizdat writer, Astafiev, described an editor who bravely published literature that other publishing houses refused to print. The tamizdat author, Zinoviev, told of a publisher who paid moral damages rather than risk publication of questionable material. His narrator was not allowed to publish without specific permission form the Central Committee. A favourable review from Yugoslavia or the West was like a death sentence to a publication. Zinoviev mentioned the conciliatory action[1] of the KGB in seeking cooperation from the Institute to prevent an author's publication abroad by having it accepted as a doctoral thesis. Publication abroad was a hostile act. Foreign publishers were depicted as intransigent, in their own way, as the Soviet press. The Russian emigre press refused publication because the authors' ideas did not suit their viewpoint and political stance. They were as intolerant as the Soviets. The narrator's daughter in Zinoviev's novel thought that if Solzhenitsyn had been published in the Soviet Union, he would not have been so famous, nor would so much interest have been shown in his books. It was best to be open with crimes. Only the gosizdat writer, Lazutin, mentioned the copyright law, which was depicted as a control on foreign publishers of Soviet classical literature. The tamizdat writer, Iskander, noted the admiration for the mullah, who read the same holy book through all changes of regimes, while scholars had to change books practically every year.

Concerning the right to privacy, both sets of writers presented similar views. The gosizdat author, Voronov, suggested that peepholes in apartment doors were no defense against burglars, and they could be used to spy on neighbours. Kuvayev mentioned secret files which recorded such facts as the identity of relatives living abooad. The tamizdat, Iskander, described a conversation in a room with a bugged telephone. The gestures of the speakers gave no doubt that the telephone was not to be trusted. Voinovich's District Party Secretary kept talking to the ceiling in his living room, as if he were speaking into a microphone.

The topic of informers was primarly one which was treated by the tamizdat writers. Iskander described how bad times had become when informers infilitrated the lowlands of Abkhazia. Voinovich noted that the Latin Spy thought the Soviet government to be very trusting of informants. With his pencil as his weapon, the spy got rid of the best Party people through letters of denunciation to the authorities. Vladimov observed that the Shabby Man's lady friend would have had to turn him in if he had escaped the prison camp, since all the neighbours were good Soviet citizens, and they would have informed on him for her. Sokolov's Curriculum Directress hid outside open classroom windows to eavesdrop and inform on the teachers. Zinoviev's narrator thought that there was always at least one informer among his drinking friends at the Dive. Also, there were informers at the Academic Institute among students and groups who participated in scientific and cultural exchanges. Maximov told of a principal who called a student into the office and recruited him as an informer. Only the gosizdat author, Voronov, mentioned informers in waysthat gave a contradictory view of them. On the one hand, a worker who had been informed upon claimed that it was easy to prove one's self innocent against slander. On the other hand, informers turned in Voronov's character, Aunt Palakha; they said that she and her husband had made more boots than their licence permitted. The tax inspector harassed them and threatened to imprison them.

Conclusion

Of the 13 Soviet novels which were analysed in this study in terms of their treatment of the theme of Constitutional Guarantees, only two treated Constitutional Guarantees as a major theme. Both authors were tamizdat writers: Zinoviev and Sokolov. They emphasised the themes of the Constitution, the law, the Communist Party and corruption. While all of the novels which were analysed treated the theme of Constitutional Guarantees, the tamizdat writers did not treat the theme of right to employment, whereas one gosizdat (Honchar) did. Topics which the tamizdat writers addressed, but were ignored by the gosizdat writers, were the themes of academic freedom and enemies of the people.

Honchar noted the right to employment when the old sailor, Yagnich, received the promise of a job as beach inspector after completion of the construction project on which he had been an advisor. The guarantee of academic freedom was addressed by Sokolov when a teacher was dismissed by the school principal at the request of the Curriculum Director (without the teacher's knowledge of the reasons for the dismissal) and again when Academician Acatov was imprisoned for his research on plant galls (which he claimed were caused by wasp larvae). Zinoviev detailed many instances of curtailment of acadmeic freedoms at the Institute of Philosophy. Intellectuals received reprimands for concessions they gave to Yugoslav revisionism, for remarks they made about the Chinese and for comments which they offered about statements published by the Western press. Zinoviev made the points in his novel that it took political influence to maintain one's post and ingenuity to get past the censors. The liberal era of the 1960's had passed. On the topic of enemies of the people, Iskander noted that the phrase was coined by Stalin. Voinovich satirised the term in his story of the loyal, but inept, Private Chonkin, who was accused of being an enemy of the people. In the novel, the prosecutor, Evprakasein, applied the logic that anyone who was unjustly arrested would hate theSoviets, and anyone who hated the Soviets was an enemy of the people. Thus anyone who was arrested was guilty of the crime of being an enemy of the people. Maximov suggested that the authorities, in their zeal to seek out enemies of the people, were incarcerating innocent victims. The narrator in Zinoviev's novel said that he had attended a conference outside of the USSR where he had talked with many enemies of Marxism, all of whom conceded that they could not conceive of anything which was better than Marxism. The dissident, Anton, in retort to the narrator, said that this only proved that the narrator had been talking with a bunch of idiots.

One of the important and significant features of the Soviet Constitution is its delineation of the duties and obligations of citizens, as well as their rights. Foremost among the duties of citizens is obedience of the law and maintenance of order against deviants. Thus informers are not only an accepted, but a valued part of Soviet society, and they received mention in the novels of both the gosizdat and tamizdat writers. In the gosizdat novels, economic constitutional guarantees (i.e. guaranteed employment, housing and pension) were rated much more valuable than the guarantees of individual liberties and freedom of information. Both sets of writers (gosizdat and tamizdat) portrayed a situation in which little could be believed in newspapers and television, which for the most part consisted of dull and insignificant agricultural and weather reports. Yet Soviet citizens were also shown in the novels as being adept at reading what was behind the news and passing information through rumours. One of the paradoxes shown in the novels was a country in which the school system undoubtedly emphasised the study of foreign languages more than any other country in the world, yet a bureaucracy which was paranoid about the importation of foreign literature and the possible contaminating effects that literature might have on the citizens. In the novels of both sets of writers, Soviet publication was not a major theme or issue. But an interesting point which was made in the novels was that because of the scarcity of good books, private collections of books were the object of theft. Also, the novels depicted the bureaucratic decisions about what books to publish and how many to publish were subject to whimsy and tortured logic.

The depictions of the class struggle in the novels did not fit the way that official Soviet literary critics would like to see it shown. The struggle was more for consumer goods and for a higher position on the social ladder than for the eradication of oppression of the proletariat by the bourgeois and counter-revolutionary elements of society. In the novels, education was shown as the primary means for social mobility. Parents aspired for their children to secure admission to competitive institutes. A hierarchy of institutes was depicted, in which admission to the elite institutes clearly gave the children an advantage in securing high status employment. The novels showed a society in which technocrats preferred security to individual liberty and did not share the political distress of intellectuals. Even though Soviet officials maintained that all Soviet citizens were equal, the novels depicted a society with a class structure which extended even to the provision of differential medical treatment on a social class basis.

Social realism as a method of writing is one of showing how society would function under socialism, rather than showing society as it actually is, or faulting it for its present defects. If official Soviet literature (such as the gosizdat novels) were to be used as an agent for moral education, one might expect that Soviet officials would authorise publication only of those authors who used social realism as their predominant method of writing. Yet, of the 13 novels analysed in this study, only two of the gosizdat writers used the method of social realism extensively in their novels in their treatment of Constitutional Guarantees: Lazutin (88%) and Korneshov (75%). The other five gosizdat writers used critical realism as their predominant method of writing. Of the tamizdat writers, only Zinoviev used dissidence as his predominant method of writing, and the other five tamizdat writers used critical realism.

A conclusion to be drawn from this study is that Soviet officials do regard novels as an important means of effecting moral education of Soviet citizenry. This is why they carefully scrutinise manuscripts and publish only those which suit the views of the bureaucracy and the Communist Party. Still, Soviet officials do permit criticism (as evidenced by the proportion of gosizdat authors in this study who used critical realism as a method of writing -- 5 out of 7, or over 70%), especially of those attitudes and behaviours within society which the officials wish to see improved along lines approved and valued by the Communist Party.

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AUSTRALIA'S ECONOMIC INDEBTEDNESS AND ITS IMPACT UPON EDUCATION: AN EDUCOLOGY OF ECONOMICS

Geoffrey Burkhardt
Canberra College of Advanced Education
Canberra, ACT, Australia

ABSTRACT

The contemporary economic situation in Australia is examined with respect to its influence upon current educational services and its probable impact upon education in the near future. It is noted that the downturn in Australian exports, relative to imports, has resulted in less income available for social services, in general, and for education, in particular, at all levels and in all sectors. The immediate result has been a quantitative contraction of funding for education, but just as significantly, there are moves afoot to change the curriculum and the overall quality or character of educational services so that they have greater utility for economic productivity. In addition, the economic townturn has been accompanied by a conservative frame of mind among policy makers which is likely to work against innovation and flexibility within the curriculum and the operations of schools, colleges and universities.

Introduction

The Australian federal government's commitment to educational funding is being placed under increasing scrutiny, along with the funding of all public social and welfare sectors, as a consequence of the increasing long term indebtedness of the Australian economy. A major feature Australia's recent economic history has been a slide into long term national and international indebtedness and an associated continuous government budget deficit. This situation has both long term and short term implications for educational services within Australia.

Smart (1986) has already analysed some of the implications of Australia's international trade deficit for the funding of higher education, with particular reference to the trends towards privatisation in higher education. In addition, the economic situation has implications for the primary and secondary education sector. Not only does Australia's deficit situation affect the amount of funds available for school systems; it also influences long term trends in curriculum philosophy and design. The trends in national economic conditions, and particularly the sustained high levels of youth unemployment, will most probably have their greatest impact upon secondary school curriculum. One of the most significant consequences of the economic indebtedness, for education, will probably be the gradual but determined replacement of progressive education philosophies with more traditional vocational and technical educational aims, particularly with respect to the role and function of secondary education in the Australian state government school systems.

In recent times, challenges to the general comprehensive education objectives of the secondary schools have come from within and outside of Government. The leader of the federal opposition, in reference to the Liberal Party's election platform for education, has expressed a desire to return to a selective secondary school system, with technical schools (The Australian, 1987b:8). Within Government, some have voiced their concerns about the failure of schools to prepare students for the labour force.

An important question which needs to be addressed is whether the secondary school is necessarily the most appropriate sector of education to deal with the job training and technical preparation of tomorrow's work force. While it is not denied that Australia's future economic prosperity will depend to a considerable extent upon the development of a highly technologically competent specialised work force, it can be argued cogently that secondary schools are neither capable nor appropriate establishments for the training of high-tech labour units. Rather, the tertiary and TAFE (technical and further education) sectors are best equipped for this role.

The Deteriorating Economic Climate

As noted by Smart (1986:3), and elaborated by many economic commentators during the previous year (1985), Australia's overseas indebtedness was expected to rise over $100 billion. Banking authorities (Westpac, 1987:4) have claimed that servicing the gross debt already accounted for 17% of the value of exports of goods and services. A foreign debt of this magnitude places a great financial burden upon state and federal governments struggling to contain monthly deficits on the balance of payments on current account. These have fluctuated in the financial year of 1986-87 between $600 and $1600 million (National Australian Bank, 1987:11-12). Public education expenditure, along with other public sector budgets, inevitably will have to be constrained greatly for a number of years, as the federal government attempts to reduce its deficit and stabilise the Australian dollar. The first stages of this financial strategy were evidenced in the May, 1987, Mini-budget of the Government. The reduction of the budget deficit, foreshadowed in the Mini-budget, in the order of several billion dollars, was evidence of the Government's intention to carry through its policy of public sector expenditure constraint, and the August, 1987, Budget gave further affirmation.

The advent of the general election in July, 1987, and the federal opposition's proposed dramatic cuts in government (state and federal) expenditure added weight to the argument that the general mood of politicians, on both sides of the House of Representatives, was for a substantial constraint, and in real terms, a contraction of public sector expenditure. The policies of Government since the July, 1987, election (in which the incumbent Labor Party was returned to Government) have given further weight to the proposition that expenditure on education at the federal level has been regarded as being of lesser priority than other categories of social sector expenditure.

While budget policy is basically short term policy, the debt servicing problem is a long term one, and it will require long term solutions, such as a sustained commitment on the part of state and federal governments to constrain expenditure or the shift of part of the burden of government expenditure from the public to the private sector of the economy. Policies have been mooted to do just this, and the establishment of private colleges and universities (the Gold Coast College and Bond University in Queensland) are manifestations of these policies in action in the higher education sector, as is the vigourous recruitment of overseas students to study (and pay full fees) in Australian colleges and universities. The longer the debt servicing problem exists, the more probable it will become that "education will become even more firmly an instrument of national economic policy" (Beare, 1987:74).

Education is a high cost, labour intensive service. It comprises a large share of state and federal government expenditure. Three-quarters of all primary and secondary school enrolments and almost 100% of tertiary enrolments are funded by state and federal governments. While youth unemployment continues at such a high level and at the same time employers are making pleas for a more technologically educated and industrially employable workforce, governments will obviously see education as a tool to be used in efforts to resolve both short term and long term economic problems. In terms of economic policy, governments can make education serve economic ends in two ways. In the long term, curriculum modifications can be made to turn out more employable and more relevantly trained school leavers and graduates. In the short term, public expenditure for education can be reduced through rationalisation processes, through elimination of inefficiencies and through elimination of high cost practices and policies in education.

It has been made quite clear by the Economic Planning and Advisory Council (1986:15) that total expenditure on education within Australia has exceeded the sum of expenditure on pensions for the aged and on unemployment benefits during the period reviewed by the Council Paper. It points out that over the period 1962-3 to 1984-5, the share of education expenditure in Gross Domestic Product rose from 2.88% to 5.40%, peaking at 5.9% of G.D.P. in 1977-8. This increase is explained by the E.P.A.C. paper in terms of the growth in the cost ratio (expenditure per student relative to G.D.P. per capita.

In the light of recent economic developments and probable directions of short term and long term national and international indebtedness, there is an increasing number of areas within education and issues related to education which will not be able to escape scrutiny from cost conscious governments during the next several years of economic constraint.

Educational Vouchers

Educational voucher schemes were examined in the mid 1970's as a possible alternate to the conventional means of financing education at the primary and secondary levels. Press reports in 1987 indicated that the federal opposition had been reconsidering various types of voucher schemes as an alternative to the present structures for educational financing from the federal government.

In 1978, the Schools Commission (Commonwealth Schools Commision, 1978) canvassed a number of variations of the voucher scheme (cf. the chapter on "Payments to Individuals"). A climate of sustained economic constraint can be expected to generate a renewed interest in vouchers, or more specifically, in various schemes for payments to individuals for schooling, rather than payments made to state departments of education or to schools.

It is unlikely that a Labor Government would ever introduce a voucher system as a means of financing schools in Australia, but the probability of a Liberal Government experimenting with such a scheme is quite high, particularly with the renewed interest in such schemes in Britain following the return of the Conservative Party.

Reconsideration of National Projects in Education

Contracting public revenue makes special programs in education vulnerable to officials seeking ways to cut expenditures. The programs such as those operated by the Commonwealth Schools Commission, i.e. the Specific Purpose Programs (SPP), including grants for English as a Second Language project, Participation and Equity Program and the Primary Basic Learning Program, have virtually been eliminated, even in spite of vigourous efforts and plans to keep them operative. The Commonwealth Schools Commission (1987) had stated its recommendation that a new Commonwealth SPP should follow on from the Participation and Equity Program (PEP) after PEP concluded in 1987. The Schools Commision indicated that by the end of 1986, $117 millin had been provided to schools and school systems under PEP. The Government cut PEP and other SPP on the grounds that they had been operating for some years and that they could be deemed to have achieved the majority of their objectives. Even well before the PEP had begun to have its maximum impact, there was evidence that financial constraints were working against it. Anderson (1987:17) described these constraints as arising from the Department of Finance.

> The second, and most direct strike against PEP came from the Department of Finance, which was successful in having the Federal Government announce in May 1985, that the 1986 PEP funds were to be shared over 1986 and 1987. This guaranteed the programme for an extra year, but it effectively halved funding for 1986.

Curriculum Reappraisal and the Demise of Progressive Education

In the light of increasing youth unemployment, the "back to the basics" movement of the late 1970's made the first assault on progressive education policies. Because an increase in the number of subject choices in the secondary curriculum necessarily meant an increase in the unit costs of a wider curriculum, the onset of economic constraints marked the second attack on progressive education philosophies as they affected the school curriculum. Although moves to return to a strictly "core curriculum" structure, uniform throughout Australian schools, did not arise exclusively from the pressures of expenditure constraint, the case for a national curriculum was complementary with efforts directed towards economic constraint in the education sector of the economy. A revised set of educational goals and priorities now evident in the Report of the Commonwealth Schools Commission (1987) places very great emphasis on the economy and the demands it makes, or should make upon the education system. Its concern with the relationship between education and the economy and its attention to the concepts of productivity, skills, management and work practices is clearly an indication that the economic reality of Australia's deteriorating economy has indeed begun to shift the direction of educational practice away from progressive philosophies back to a more traditional system.

This line of thinking is most evident, for example, in the newspaper headline, "Liberals Push for '60s-style Schooling" (The Australian, 1987b:8). Claiming structural change to education was necessary to redress youth unemployment, the Federal Opposition Leader, Mr. John Howard, was reported to have said

> I will make no bones about saying that I don't think the move towards a general, comprehensive education and the move away in the government sector all around Australia from selective high schools was a good move.

The newspaper report went on to state that a shift back to technical schools would imply schools-based trade training, something which was advocated in the Labor Government's May mini-Budget.

Not only do these potential structural changes to school organisation threaten progressive educational philosophies. Classroom teaching and approaches to learning might also be forced to undergo reactionary revision in the name of economic stringency and job-orientedness. Australian teacher educators, for the most part, have spent the last 20 years attempting to bring about improvements in the teaching and learning process in line with research findings about effective teaching and sound learning theory. The political and economic pendulum now seems to be swinging against those reformist efforts.

In addition there is reason for concern for the high potential that economic constraint and job-training in the secondary school have for the implementation of a rigid national core curriculum. This would see the end of the school-based curriculum development movement, so successful in many of the Australian states, and especially effective in the Australian Capital Territory (ACT) Schools Authority. The school-based curriculum development movement has contributed much to engendering diversity, originality, interest and incentive for school students and to providing professional rewards and job satisfaction for teachers.

Teacher satisfaction depends to a large extent on teacher autonomy. It appears that, in attacking the school-based curriculum development movement, some sectors of Australian society are no longer prepared to trust the teachers in matters of curriculum development, nor are they as willing to treat them as professionals in other educational matters. In doing so, they fail to recognise the fact that it is not the teachers or the schools which have created youth unemployment, but the ebb and flow of international and national economic events. Anderson (1987:7) emphasises this fact in his statement on youth unemployment that

> [u]nfortunately, some individuals in positions of power in government or business have been prone to blame the schools.

Replacement of High Cost Older Teachers with Lower Cost Younger Teachers

Because the present salary structure of state government teachers ensures that beginning teachers are paid on a lower scale than more experienced teachers (whose salary increases by years of service), there is a clear inventive for education departments to substitute lower cost beginning teachers for higher cost experienced teachers, wherever this is possible. There are good educational arguments, in addition to economic ones, for employing young beginning teachers ahead of older experienced teachers, the chief of which is the need to rejuvenate an ageing teacher stock.

School Size and Cost-Effectiveness

The relationship between school size and cost per student place has been an area of increasing concern to cost conscious education departments. Research (A.C.T. Schools Authority, 1981:6-12) has shown that larger schools (i.e. 800 to 1000 pupils) have a significantly lower cost per student place than smaller schools (i.e. 300 to 500 pupils). While the educological and administrative arguments for smaller rather than larger schools are acknowledged, it becomes a more crucial issue when education departments are required to reduce cost per student place. In the tertiary education sector, considerable success has been achieved over the last few years in the consolidation of groups of small colleges into more cost effective larger units, but in primary and secondary education, the issue of school closures and amalgamation is an area highly charged with local politics.

Average Class Sizes

During the last decade, average class sizes in state government school systems have declined considerably. This has been a consequence of a number of variables, including the decline in school enrolments for some age cohorts and the surplus of school teachers available for employment. A major economic result of this more favourable class size average was a greatly increased average cost per pupil place. It has been a matter of concern to politicians that, although school enrolments in some states had remained constant or actually declined, the total costs of education (after allowing for inflation) had continued to increase. There has been concern in some state government political quarters that despite this marked and continuing increase in real cost per student place in government schools, there did not appear to be any accompanying improvement in the quality of education, or the employability of the graduates of the school systems.

Cost Efficiency and Expenditure Cuts in the Higher Education Sector

Smart (1986) and others have noted a number of trends in the higher education sector which reflect the impact of Australia's increasing economic indebtedness. Among those discussed by Smart are the re-introduction of tertiary education fees in the form of the $250 administrative charge levied on each student for 1987 ($263 in 1988), the export of higher education in the form of full-fee overseas student policies and the development of private, semi-private and hybrid tertiary institutions which combine private sponsorship and government funding (Smart, 1986:6-12).

Conclusions

In an economic climate of extreme budget deficits, high external national debts and long term debt servicing burdens of governments, together with very high youth unemployment levels, it is argued here that greater expenditure cuts to the education sector are inevitable (in real terms). However, it is not simply the expenditures, in themselves, that are most significant for education. It is the impact which economic decline may have upon a large scale revision of school curricula and the balance of public and private responsibility for paying for education, which will become the major focus of national concern.

Current government and business sector thinking, of the type evident in the Schools Commission Report, *In the National Interest*,which focuses heavily upon the relationship between education and the economy, deliver a clear signal that the economic reality of Australia's deteriorating economy has begun to shift the direction of educational practice away from progressive philosophies back towards a more traditional system, based on greater bureaucratic control and centralisation. It is easier for economically wealthy nations to afford the costs of an educational system based on curriculum diversity, educational individuality and decentralised educational decision making. However, by exploring alternative methods of curriculum management and combinations of resources for schools and education, less wealthy nations may aspire to these goals.

In economic decline, one could argue that there is considerable economic wisdom in education policies designed to rejuvenate in the younger generation the spirit of the pragmatic work ethic, almost lost during two decades of over indulgence by the work force of the generation of the 1960's and 70's, who was hooked on an insatiable appetite of salary increases, with scant regard for labour productivity. Have the economic sins of the fathers now been visited upon their sons?

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AN EDUCOLOGY OF CULTURE: IMPLICATIONS FOR TEACHER EDUCATION REFORM FROM CONTEMPORARY ETHNOGRAPHIC STUDIES OF YOUTH CULTURES AND YOUTH SUBCULTURES

Malcolm B. Campbell
Bowling Green State University
Bowling Green, Ohio, USA

ABSTRACT

In the recent spate of national reports on reform in American education and teacher education, qualitative student input into the formulation of educational priorities has been largely omitted. Ethnographic studies are the means which inform us qualitatively of the nature of our youth culture and youth subculture. These studies in the USA have assumed two methodological directions: critical and interpretive. Both use participant observation and participant analysis of in-school cultures and subscultures. Critical ethnography focusses on social control functions of schools and social contradictions in which schools participate. Interpretive ethnography focusses on the meanings of school for the participants. In the USA, researchers on youth cultures have assumed that youth are either cut off from adult society or are constantly forced to choose between opposing cultures, viz. in-school or out-of-school culture. These views, however, are oversimplistic, for the reality is that there are multiple youth cultures and that youth do adapt to membership in adult society with regularity. Indeed, it is the diversity of transactions in which youth participate culturally in a pluralistic United States that infuses ethnographic accounts of youth culture with a richness of meanings for the teacher educator and the teacher of educology.

Introduction

> Jacques Leporatti was considered an average student, just intelligent enough so that with great effort he passed the Primary Certificate exams. When I asked him why he worked so hard at his lessons his reply was prompt and forthright: Pour qu'on me laisse tranquille!" ("So that people will leave me alone!") [Wylie, 1964: 90-91]

> My English teacher, I was reading my book and he blamed me. And he said to stop reading, and I did. And he goes, 'now read the proper page,' so I started reading that. And then he said, 'You're not supposed to be reading that.' And I said, 'You just told me to.' And then he started blowing me up for *not* reading the book. Then 'cause he started yelling at me, I started yelling at him. And I got sent out. Then I wasn't allowed back in English for a week, or so. He knew he was wrong, but I still got kept out for a week. [Connell et. al., 1982: 84-85]

> Students can add greatly to the time provided in school with time set aside at home for study . . . We see too little "self-help" in many households today, especially among those students whose academic achievement is lagging and who need it most. [U.S. Department of Education, 1986: 4]

It may seem peculiar to blend together the comment of a pupil in the village of Peyrane, Vaucluse *departement*, France, with a 14-year-old Australian pupil's recollections of her schooling experience at Rockwell High, a government school located in Sydney's suburbs, still more singular to associate both with a recent dictum by Chester E. Finn, Jr., Assistant Secretary for Research and Improvement, U.S. Office of Education, on the responsibility of students in their learning endeavours. In what follows, we will suggest that this admixture is appropriate for an inquiry which is focussed on the student; more importantly, it serves to remind us of a significant void in the recent spate of national reports on reform in American education, generally, and teacher education, specifically, i.e., student input to the designation and implementation of educational priorities.

The term, 'student input', has much too broad a connotation for what is missing in the national reform effort in American education, for indeed in that effort student input there is. For example, the Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession (1986: 81) informs us that "[a]t both ability levels and for each ethnic group, the education [educology] major appears, on average, to draw the least able students." This assertion is based on unpublished Educational Testing Service tabulations of the statistical mean of combined Scholastic Aptitude Test scores for college-bound Black, Mexican American, Puerto Rican and White high school seniors (i.e., Year 12 students, or those completing 12 years of school) by intended field of study in post-secondary institutions. Such quantitative information is useful; it does not, by any means, fully exhaust factors implicated in pre-service teacher education programs popularity with Scholastic Aptitude Test (SAT) defined "less able" students. In brief, what the literature on reform in American education and American teacher education frequently lacks is what for a better term we will name as 'qualitative student input' (QSI). QSI is difficult to define in a single sentence. It is heavily centred on the perceptions which students have of their daily lives; it is illuminated by ethnographic studies of youth cultures and subcultures.

Ethnographic Research and the Concepts of 'Youth Culture' and 'Youth Subculture'

Ethnographic research and the concept of 'culture' have been valuable aids to our understanding of American society since the pioneering efforts of the American anthropologist Frank H. Cushing to study Zuni life (an American Indian culture) in the late 19th century and the English anthropologist E.B. Taylor to publish a two-volume work on *Primitive Culture* in 1871 (Mark, 1976: 449-486. While contemporary anthropologists of American education would reject Taylor's view of culture as an absolute indicator, evaluated on a universal scale, of the degree to which people were or were not "civilised" and take issue with Cushing's position that people contained within themselves through successive environments the "impress of the *Idea* of the earliest environment which affected their culture" (Mark, 1976: 468), they stress the centrality of a concept of 'culture' in understanding the dynamics of educational policy and the important methodological role ethnographic research has in clarifying our understanding of the complex interplay between culture and provision of education.

While space and time preclude a detailed exegesis of the diverse ways in which anthropologists of education (or more properly educologists of culture -- cf. Christensen, 1987, for an explication of this distinction) have utilised the concept of 'culture' and ethnographic research to explicate the workings of schooling (readings listed in the bibliography will aid in that endeavour), a few considerations are in order.

Ethnographic research in American education, popularised in the USA by George D. Spindler and his associates in the 1960s and 70s, has assumed two methodological directions: ciritical and interpretive. While both directions accent a research mode consisting of participant observation and participant analysis of microcosmic in-school cultures and subcultures, critical ethnography emphasises the social control functions of schools and social contradictions in which schools participate (for example, Michael Apple's correlation of increased teacher professionalism and teacher deskilling). Interpretive ethnography centres the research task on revealing "the workings of . . . educational systems in terms of their meanings for the participants, either as teachers or learners" (Maseman, 1982: 5). Both approaches stress the inadequacy of investigating the formal structure of schooling in terms preconceived and too narrowly delimited by the researcher. Both emphasise what Magoon (1977: 652, 655) has named "constructivist research" in which "a significant part of the context of behavior [sic] that educational researchers observe is a structure produced by the constructions of the observed subject." Critical and interpretive ethnographic research addressed to the diverse interplay of schooling and the lived lives of youth focus on the cultures and subcultures in which youth participate.

In an afterwoord to the American edition of his classic study of how English working class youth obtain working class jobs, Willis (1981: 203) asserts that the role of ethnography is to reveal the cultural viewpoint of the oppressed. His is a protrait of male counter-school culture shaped by

> everday existence and its commonplace span of shared concerns, activities, and struggles, it is also the realm of meanings, objects, artifacts, and systems of symbols . . . These meet on the terrain of "experience" and the ways in which this is intimately bound up with the structures and contradictions through

> which social agents must live. This general level of social existence I designate "the cultural." [Willis, 1981: 201]

This perspective on lived "culture" and the meanings associated with it also flavours less critical, more interpretive ethnographies of youth in school. In one description of six "good" American high schools, Sara Lawrence Lightfoot (1983: 6), for instance, sought

> to capture the culture of these schools, their essential features, their generic character, the values that define their curricular goals and institutional structures, . . . their individual styles and rituals.

Importantly to an understanding of school culture she added

> I also try to trace the connections between individual and institution -- how the inhabitants create the school's culture and how they are shaped by it; how individual personality and style influence the collective character of the school.

At this level of microanalysis, the concepts of 'youth culture' and 'youth subculture' are useful aids in shaping our understanding of the understanding which youth have of the interrelationships between their guided studying ("studenting"), on the one hand, and the functions and structures of formal educational provision, i.e., school, on the other hand. A brief word about appropriate contexts in which to view youth culture and youth subculture is necessary.

It is crucial to an understanding of the concepts of 'youth culture' and 'youth subculture' to distinguish both concepts from meanings associated with the concept of 'school culture', although each of the concepts shares much in common. Brake (1985: 24) suggests that youth culture and youth subculture can be discussed within two contexts, viz. generational and structural explanations:

> [t]he first analysis is concerned with the continuity/discontinuity of inter-generational values, and the second with the relationship of youth to social class, the mode of production and its consequent social relations.

Youth cultures and subcultures within the first context represent chronologically age-specific responses to a socialisation dysfunction in society, a segregation occurring between society and age groups often named with the term, 'the generation gap' or the term, 'the marginality of youth'. Within the second context, youth is portrayed (Brake, 1985: 26) as

> a particular generational response to a wider class problem involved with structural elements such as housing, employment, further prospects and wages.

In both generational structural contexts, the ethnographic literature on youth cultures and subcultures is a vast one. It largely represents a corpus of knowledge eliciting no overarching theme or theory. A major thrust in this literature, however, is to divide youth into categories based on the content of their conformity to or rebellion against those who exercise hegemonic control over subordinate groups in society. Borrowing Stuart Hall's definition of hegemonic control, Hebdige (1979: 16) suggests that cultural hegemony centres on the shaping of consensus in order that the authority of dominant social classes appears as nonideological, permanent and natural, or as James Herndon poignantly put it in a book by the same title, "the way it spozed to be." Within this perspective, "respectable youth," "delinquent youth," "cultural rebels" and "politically militant youth" (Brake, 1980: 23-24) are caught up in expressing what is

> a fundamental tension between those in power and those condemned to subordinate positions and second-class lives. This tension is figuratively expressed in the form of subcultural style. [Hebdige, 1979: 132]

Two other perspectives of youth culture and youth subculture are critical, the segregation and polarisation hypotheses.

In the USA, researchers on youth cultures and subcultures have assumed either that youth is largely cut off from adult society and consequently develops modes of expression entirely within a referential youth culture (the segregation hypothesis) or that youth is constantly forced to choose between two basically opposed cultures,

> . . . the culture of the school, based on deferred gratification, cognitive skill, individual achievement and deference to authority, and the out-of-school "youth culture," based on immediate gratification, physical skill, group solidarity and the equality of group members . . . [T]hey are forced to choose either one or the other, and consequently low commitment to school will tend to be associated with high involvement in "youth culture." [Murray, 1978: 22]

Both conceptualisations of the relationship between youth and forms of prevailing cultural and social membership are, however thought-provoking, essentially overly simplistic. Youth does adapt to membership in adult society with regularity; there is not one "youth culture," but several. There are many cultures, moreover, with which youth in America interacts: school culture, street culture and pop media culture, for example.

Indeed, it is the diversity of transactions in which pupils, teenagers, adolescents, students and youth participate culturally in a pluralistic United States that infuses ethnographic accounts of youth culture and youth subculture with a richness of meaning for the teacher educator and the teacher of educology, a richness conspicuously absent in the recent national reports on American teacher education reformation. What are some implications of contemporary ethnographic studies of youth cultures and youth subcultures for teacher education reform?

Implications for Teacher Education Reform

Philips (1983: 129) concludes her ethnographic study of native American Indian children on the Warm Springs Indian Reservation in central Oregon with the following admonition:

> . . . [B]ecause the minority students' efforts to communicate are often incomprehensible to the teacher and cannot be assimilated into the framework within which the teacher operates . . .

> [t]he teacher . . . must be seen as uncomprehending, just as the students are. And it is primarily by virtue of the teacher's position and authority that the students and not the teacher come to be defined as the ones who do not understand.

Wordsworth in *The Prelude* put it more succinctly: "What we have loved, others will love, and *we will teach them how.*" In citing Philip's ethnography and Wordsworth's poetry, we are not suggesting that students belonging to youth cultures and subcultures should have a totalitarian grip on American educational provision. Rather these statements are reminders that much of that provision is all too frequently defined by and implemented through the contextual perceptions which adults bring to cultural understanding. In these contextual perceptions, youth is viewed as a transitory stage of life, a stage to be abandoned as soon as possible, at best, and, at worst, an objective problem which is solvable within institutionalised and technologised panaceas (Suransky, 1983: 188-189).

If American education has a basic problem;the problem is not the student, not youth. Rather, problematics inhere in a virtually total failure of its political organisation (Hawkins, Jr., 1985: 30). Parallel to the rise of highly centralised American education (in especially the public sector) there has occurred a fragmentation and division of fundamental interests:

> a situation in which parents, students, teachers, and school boards are members of opposing teams. We have created organizations called schools that disjoin parent, student, community, and education. [Hawkins, Jr., 1985: 30]

Ethnographic studies of youth cultures and youth subcultures do not provide us with unequivocal anodynes, panaceas, or solutions for rejoining youth with student. These studies, however, do have specific implications for teacher education reform.

Importantly, ethnographic research on youth cultures and subcultures encourages the pre-service teacher to consider student cultural forms, their origins and relationships between teacher-authored actions and group culture formation. Everhart's ethnographic study (1983) of the formation of student-controlled "regenerative" knowledge at the Harold Spencer Junior High School is a case in point. Secondly, studies of youth cultures and subcultures are invaluable aids (Weis, 1986: 47) to teachers-to-be in suggesting what the teacher might walk into on entering the classroom

> and the ways in which their actions and messages embedded within the school may encourage, in contradictory ways, cultural forms to emerge.

The imposition of adult-authored cultural forms together with the lack of significant student input on the form and content of schooling result, perhaps, in accentuated youth culture and youth subculture responses. Finally, ethnographic research on youth cultures and youth subcultures may inform pre-service teachers of how their own actions in the school as well as those actions of other teachers may encourage cultural inequalities, racism, sexism and the like.

The ethnographic study of youth cultures and youth subcultures points us in the directions of treating the "youth problem" and, indeed, the social construction of youth in ways that are less controlling and less punitive. As Grubb and Lazerson (1982: 163) suggest, youthful rebelliousness in American society is defined generally as status offenses, punishable by an ever-expanding juvenile system; hostility to school is met by demands that "students work warder."

> In each instance, anger has led to policies that are essentially punitive and controlling -- as if youths were already adults who cannot be rehabilitated -- and away from public efforts that could comprehend the sources of the problems and reconstruct the options available to youth. [Grubb and Lazerson, 1982: 163]

Efforts to understand why youths are bored in school, efforts to understand youth abandonment of conventional rites of passage from home to school to work -- to both endeavours ethnographic research contributes much, particularly an understanding of youth understanding.

As Giroux (1983: 89) suggests, the effects of social class membership pervade schooling, and they are reproduced in the manifold ways by which diverse student groups deal with the culture, ideology and politics of the school. Youth cultures are relational responses, formed in patterns of consent and resistance, to cultures of dominance. Speaking generally of youth culture, Brake (1985: 198) hints at a pervasive theme implicit to these responses:

> It is an expression of the mini-politics of rebellion against obscure social forces. During a brief period, youth steps outside the stark reality of industrial society to explore a symbolic identity, to celebrate being young, optimistic and joyous --a moment all too brief in personal biography.

Ethnographic research on youth culture and youth subcultures has taken us some distance in uncovering the fallacy of assuming student expression to be the product of homogeneous student milieux. Teacher education reform needs to be attentive to the mixed and often ambivalent messages originating in these milieux.

A recent United States General Accounting Office Congressional Briefing Report on school dropouts (GAO, June, 1986: 34) concludes:

> Considerable research has been done on the dropout issue, and many dropout-related programs have been undertaken. Yet, based on our review of the literature . . ., it is not generally known "what works" in terms of specific interventions to prevent youth from dropping out of school or to encourage their reentry.

United States Department of Education pronouncements (for example, that of Chester E. Finn, Jr., cited earlier) to the contrary, if we are to focus on the student meaningfully and to understand why the American counterparts to Jacques Leporatti and Heather Arlott are turned off from conventional schooling policy, a search for dropout prevention programs that work (called for in the Dropout Prevention and Reentry Act of 1985, H.R. 3042), statistical exegeses of

Scholastic Aptitude Tests and commands that principals and teachers "hold and convey high expectations for student achievement and student behavior" (NEA/NASSP, August, 1986: 24) will not suffice alone. Shanker has urged very recently that "we need to go in new directions to bring teachers closer to their students" (Shanker, January 11, 1987: 7). Developing ethnographic strategies toward understanding students is one means by which this closeness might occur. Ethnographical studies of youth cultures and youth subcultures suggest guidelines in which these strategies might be framed. Clearly, the skills associated with ethnographic research (Tammivaara and Enright, 1986: 106-125) have a pivotal place in teacher education reform if we are concerned genuinely with substantively centring our attention on the student.

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AN EDUCOLOGY OF TEACHING: A MODELS APPROACH

Laurie Brady
Kuring-gai College of Advanced Education
Lindfield, NSW, Australia

ABSTRACT

A model of teaching is usefully conceptualised as a blueprint to guide preparation for teaching and action within the process of teaching. From the literature about teaching and from the experience of consulting teachers and teacher educators, at least five models of teaching can be distinguished: exposition, behavioural, cognitive developmental, interaction and transaction models. These five derive from the criteria of centredness (pupil vs. teacher), directedness (highly teacher directed vs. minimally teacher directed) and areas of learning (academic, social, behavourial and personal). While the models are distinguishable, they may not be entirely discrete categories of teaching. Models of teaching are related to, but distinguishable from, approaches and methods of teaching. No single model has intrinsic superiority over another; each has extrinsic value, depending upon the particular circumstances of an educational situation.

Introduction: The Concept of Models

It is generally considered that there is no ideal form of teaching, but that different teachers teach differently, and that the same teacher may teach in different ways on different occasions. Such differences in procedures may be the result of teacher personality and style, different subject matter, different objectives, or the variable receptivity of learners. Broad classifications of the different forms of teaching and learning are referred to as models. More specifically, a model may be defined as a blueprint to guide the preparation for and implementation of teaching. Any model selected for teaching therefore dynamically reflects the preferences and values of the researcher.

Several understandings exist in educology and other disciplines as to what constitutes a model. Brodbeck (1963) claims that the word is often used in the most general sense as a synonym for theory. Therefore a model often simply refers to speculation about the relationship between a number of variables.

De Cecco (1968: 11) distinguishes between theories and models by suggesting that models do not have the rigour of tested theories. He claims that

> Unlike theories in their early state of development, models lack factual support. Eventually useful models give way to empirically supported theories.

This article relates the determination of five broad models of teaching, which have been adopted by schools, universities and colleges in the training of teachers. Accepting De Cecco's (1968) distinction, the selection of any model cannot be empirically defensible, but the classification of the five models is derived from an analysis of the literature, and the experience of many consulting teachers and teacher trainers.

The Nature of the Problem

Several difficulties confront the researcher in the determination of models:

(a) *There are relatively few developed models of teaching.* Text books tend to concentrate more on learners and their characteristics than on teachers. Gage (1963) claims that theories of teaching are neglected because many researchers believe that if there is a satisfactory theory of learning, then the teacher can act upon that theory without developing a separate theory of teaching. Teaching is therefore perceived as a mirror image of learning.

Smith (1961) claims that whereas 'teaching' refers to teaching behaviours, there is no equivalent word to indicate the behaviours of pupils. Suggesting that learning is an outcome, and not a set of observable behaviours, Smith suggests the word 'pupilling' as an equivalent to teaching. Elsewhere, Steiner (1981) and Christensen (1981) propose the term 'studenting'.

The paucity of developed models poses the problem of a lack of information as a basis for further development.

(b) *The information that informs teaching is vast and complex.* The depth and range of this available knowledge, related to learning theory, motivation, readiness, teaching style and method, classroom interaction, ethics, epistemology, management techniques, personality and group dynamics (all subsumed by the foundation disciplines of educational psychology, philosophy, sociology and curriculum development) may create confusion and prove daunting for researchers. This vast complexity of information poses the problem of how to integrate and classify the information in an intelligible way.

(c) *There are many conflicting views of teaching and learning.* The most common dichotomy is that of traditional, formal or teacher-centred education, and progressive, informal or student-centred education. Similarly, humanistic education and a behaviourist orientation are regarded as sharp contrasts. These forms of teaching-learning are examples of extremes. There is a multiplicity of other forms representing different orientations to teaching. These different and often opposing views pose the problem of whether or not there is a need to reconcile the different views of teaching.

The Literature

There are four major classifications of the full range of models of teaching. Other texts detail models in particular areas. For example, Eggen, Kauchak and Harder (1979) treat six information-processing models (General Inductive Model, Concept Attainment Model, Taba's Process Model, General Deductive Model, Ausubel's Model and Suchman's Inquiry Model) and suggest that the models are not general approaches for all teaching situations, but specific teaching techniques for particular goals.

Mosston (1972) adopts seven teaching models, which are placed on a specturum from "command" to "discovery." The seven models are distinguished as follows:

1. The Command Style, in which rigidly uniform behavioural standards apply to all, and in which decision-making is by the teacher.
2. The Task Style, which is still teacher-dominated, but which allows for some pupil decision-making.
3. The Reciprocal Style, which involves pupils working together and having more decision-making responsibilities.
4. The Individual Program (Teacher's Design), in which the pupil selects that task and level of performance which seems most appropriate.
5. The Guided Discovery Model, in which, for the first time, the pupil makes decisions about subject matter.
6. The Problem-Solving Model, which provides for more pupil decision-making, in both quantity and quality.
7. The Individual Program (Pupil's Design), in which the pupil makes all the decisions, designs the problems and asks the questions.

The five models of Stallings (1977) are also placed on a continuum:

1. The Exploratory Model, which aims to develop creativity and independence.
2. The Group Process Model, which aims to develop self-awareness, responsibility and co-operation.
3. The Developmental Cognitive Model, which aims to develop cognitive skills.
4. The Programmed Model, which aims to develop basic skills through behaviour modification.
5. The Fundamental Model, which aims to develop basic skills through factual knowledge.

Lapp, Bender, Ellenwood and John (1975) indicate that the variety of teaching and learning styles can be validly subsumed by four models. These are:

1. The Classical Model, in which subject matter is important and the teacher is trained more in terms of what to teach than how.
2. The Technological Model, which also regards education as the transmission of information, but focuses on the competencies of individual pupils.
3. The Personalised Model, in which teaching is built on the interests, experiences and growth of pupils.
4. The Interaction Model, in which education is seen as an interdependent effort between teacher and pupil, and content is viewed as constantly changing.

The major text, and most comprehensive examination of teaching models is that of Joyce and Weil (1980), who identified 23 models in four basic families:

1. Information-Processing Models share an orientation towards the information-processing capability of pupils.

2. Personal Models share an orientation towards the individual, the development of selfhood and the way individuals construct their unique reality.

3. Social Interaction Models focus on the process by which reality is socially negotiated, thus emphasising the relationships of the individual to society.

4. Behavioural Models emphasise changing the visible behaviour of the learner rather than the underlying psychological structure.

Joyce and Weil published three books in 1978, each on a separate family of models.

The above classifications of models do have characteristics in common. With the exception of Mosston, each theorist proposes a model that is concerned with training student competencies and changing their observable behaviours. Each theorist postulates a model which stresses the needs of the student, and the development of individuality. Each theorist posits a model based on the development of social skills within the context of society. There is also some agreement on the existence of a model based on traditional or formal education, and one based on the development of cognitive skills. Table 1 displays the models of Mosston, Stallings, Lapp et al., Joyce and Weil and those determined by the author. They are arranged by the author on the continuum of teacher-centred to pupil-centred, although no attempt has been made to order the models within Joyce and Weil's families of models.

The Models

In the determination of an appropriate classification of models the author adopted this same dimension of teacher-centred to pupil-centred. While acknowledging that such a uni-dimensional classification is a simplification, and mindful of the fact that other classifications may also be plausible, the teacher-centred pupil-centred continuum does provide a useful conceptual tool. The models selected by the author cover the full range of amount of teacher-direction (as indicated in Table 1) and include the academic, social, behavioural and personal areas of learning. The models are defined as follows:

1. The Exposition Model is a predominantly teacher-centred model that focuses on the expository approaches of narration and explanation and that uses practice and revision to consolidate learning. This model is based on "traditional" or "classical" education, with its accent on traditional subjects, basic skills, whole-group teaching and teacher direction. But the model does not have the stigma often associated with traditional education. It is not archaic or inflexible, and the approaches of narration, explanation, revision and practice are considered basic to effective teaching.

2. The Behavioural Model is based on tightly sequenced steps of learning and the use of reinforcement to elicit observable behaviours.

Table 1: An Overview of Models

Mosston	**Stallings**	**Lapp *et al***	**Joyce and Weil**	**Brady**	**Continuum**
↑ Command style					Teacher centred ↑
Task style	Fundamental	Classical		Exposition	
Reciprocal style	Programmed	Technological	Behavioural	Behavioural	
Individual program (teacher design)	Developmental cognitive		Information-processing	Cognitive developmental	
Guided discovery	Group process	Interactional	Social interaction	Interaction	
Problem-solving	Exploratory	Personalised	Personal	Transaction	
Individual program (pupil design) ↓					↓ Pupil centred

* The conceptual scheme used by Mosston makes it impossible to relate his models to those of other theorists.

** From Brady, L., *Models and Methods of Teaching*, Sydney, Prentice-Hall of Australia, 1985

It is therefore broader than purely technological models. The principles of behaviour theory that underlie the model find practical expression in formal full-class teaching or in individually programmed instruction. But the individual emphasis of the latter does not imply that the model is anything but predominantly teacher-directed.

3. The Cognitive Developmental Model is a model in which the teacher selects learning tasks according to pupils' developmental level and elicits pupils' reasoning in relation to these tasks. Like the behavioural model, this model emphasises planning small instructional steps, but the focus is on the nature of pupil reasoning that underlies behaviour and on developmental stages. An "information-processing" or "cognitive" model is not included, as the range of teacher procedures in such a model is so variable. What Joyce and Weil (1980) classify as "information-processing" models should be regarded as approaches which may be used in all of the other models. A number of "cognitive" approaches are possible within the context of the cognitive developmental model.

4. The Interaction Model is a model which emphasises learning occurring as a result of the pupil's interaction with other people and with society. Thus, the emphasis is on personal interaction. Although it is predominantly a group process model, this name is not adopted because it implies learning occurring in pupil groups only, and not as a result of the interaction of the teacher and individual pupils.

5. The Transaction Model is a pupil-centred model of teaching which involves a range of teacher structuring in which the predominantly self-directed learner transacts with the environment (physical and human) and changes as a result of that experience. Whereas the focus of the interaction model is social interaction, the focus of this model is the action or "transaction" of the learner. This model derives from the theories of progressive education and from contemporary practices of open education. The model allows for varying degrees of teacher direction of pupil discovery.

The Characteristics of Models

(a) The models are not discrete. The models are the result of attempts to classify teaching behaviour in a logically defensible way. There will be obvious overlap between models. For example, there may appear to be similarities between the exposition and the behavioural model, and certainly a variety of models may involve a high level of student interaction.

It would be unusual for a teacher to select a model, *in toto*, and implement it. Instead, teachers select eclectically, guided by what is appropriate to the situation. Teaching should not be viewed as a limited number of models which constrain the nature of teaching, but as a rich variety of methods from which teachers select. Teaching may be seen as a kaleidoscope of methods, and just as the tube of the kaleidoscope is rotated or shaken to produce a mosaic, so teachers select appropriate methods to produce a coherent pattern.

Such a pattern may or may not be consistent with a particular model.

(b) There are different interpretations of the specificity of models. Models are broad classifications of teaching-learning behaviour, and models can be distinguished from approaches and methods. These distinctions are illustrated in Table 2.

Table 2: Models, Approaches and Methods

Model	Approaches	Methods
Exposition	Narration	Questioning
	Explanation	Recording
	Revision	Discussing
	Practice	Dictating
		Summarising

A model is a broad theory of teaching; an approach is a more specific teaching technique used within a model; and a method is a more specific teaching technique.

According to these definitions, many of the models of Joyce and Weil (1980) are approaches. For instance, they view role play as a model rather than an approach in an interaction model, and they regard the approaches of Taba, Suchman and Ausubel as models, and not as approaches that may be used in a number of models.

(c) No single model is superior. There is at least *prima facie* logic in the argument that using a variety of models may increase the likelihood of achieving the multiplicity of school objectives. Models, approaches and methods are chosen according to their suitability to the teaching in question. Whereas the cognitive developmental model and interaction model are probably best suited to moral education, so the behavioural model is probably most appropriate to teaching a skill in physical education.

Conclusion

Educational administrators and teachers should benefit from a theoretical and practical knowledge of the variety of identified models. The broad classification of teaching-learning behaviours into models is a valuable complement to the skills based approach to professional training. The use of models is further encouraged for these reasons:

(a) The great variety of school objectives are more likely to be attained by using a variety of models.

(b) Particular models are more suited to particular subjects.

(c) Particular models are more suited to specific student needs.

(d) The quality of teaching may be enhanced by combining and adapting models.

(e) The use of a single model constrains both teaching and the process of professional development of teachers.

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AN EDUCOLOGICAL APPROACH TO IDENTIFYING TEACHERS' UNDERSTANDING OF SCIENCE CONCEPTS

Catherine Onyeka Ameh
Monash University
Clayton, Victoria, Australia

ABSTRACT

A group of teachers (N=388) in Nigeria were given a concept test -- a pencil and paper test similar to the Learning in Science Project (LISP) for students -- and some teachers were interviewed using Osborne and Gilbert's (1979) Interview-About-Instances Technique. Responses obtained from written tests and interviews were analysed for scientific understanding and compared to responses of students in the Learning in Science project. This research showed that teachers' understanding can be probed using the same type of approach as that used with students. The research also found that lack of science understanding is not confined to students alone. Many science teachers do not understand some fundamental science concepts, and teachers' beliefs and ideas are often not any more sophisticated and adequate than their students'.

Introduction

The declining number of students enrolling in science in Nigerian secondary schools calls for an investigation. Even the few who enrol for science have demonstrated far more theoretical knowledge than practical. This has left the nation's science educators and curriculum developers with more puzzles than answers to the solutions intended for science education.

In the search for causes of poor performance and improvement of science learning, most recent research has focused on student beliefs and ideas about natural phenomena (e.g. Champagne, Gunstone and Klopfer, 1983; Osborne and Freyberg, 1985). It is also common for researchers to urge classroom teachers to probe students' beliefs before instruction to enable the teachers to begin instruction from the students' conceptual position (e.g. Osborne and Gilbert, 1979; Shipstone, 1982; Symington and White, 1983). It would be difficult, almost impossible, for teachers to probe students' beliefs and ideas if the teachers do not have ideas in science more sophisticated, adequate and sound than those of their students.

The overall study was designed to investigate science teachers' understanding in selected aspects of science concepts. These were animal, plant, force, friction, electric current, gravity, light and chemical reactions. These aspects of science concepts of which understanding of teachers is sought, are believed to be the areas where students have the most naive conceptions, as evidenced by the New Zealand Learning in Science Project (LISP) reports, and other research reports from many parts of the world. Examples are animal

(Bell, 1981), force (Osborne and Gilbert, 1980; Gilbert, Watts and Osborne, 1982; Gunstone and Watts, 1985), electric current (Russell, 1980; Osborne, 1981), gravity (Stead and Osborne, 1981; Gunstone and White, 1981) and chemical reactions (Schollum, 1981).

In this study, quotes of teachers' responses in test and answers from interview have been analysed to determine the degree of variance of responses from scientists' beliefs, and the teachers' beliefs have been compared with students' responses in the Learning in Science Project.

Approaches

The investigation employed two approaches: paper and pencil test and interview. The written test was designed with alternative conceptions in mind. This is similar to the LISP written tests. The LISP written tests were essentially designed to probe conceptions and were devised from individual interviews, either Interview-About-Instances or Interview-About-Events. The motivation for devising these written tests was to determine how widespread were the conceptions held by students who had been interviewed. That is, having established that a particular range of ideas about a specific concept existed among a group of interviewed students, a written probe ofideas was then used to explore the prevalence of this range of ideas in a much larger sample. The written probes used by LISP were of two general forms: open-ended questions or multiple choice questions. In each case, the question form is consistent with the nature of the interview schedule initially used. As an example, in order to explore students' conceptions of the term 'animal', the Learning in Science Project used an interview schedule based on a set of cards. Each card contained a drawing of either an instance of animal (e.g. cow) or a non-instance of animal (e.g. car). For each example the interviewee was asked whether or not the example was an animal, and to explain why they answered in this way. The interviewer then asked further questions to explore the reasoning being used for the example. This approach was translated into a written probe of ideas about the term 'animal' quite directly: the drawing of the example was given, students wrote their answers to the Yes/No question ("Is . . . an animal?") and then wrote their reasons for their answer.

The second general form of LISP written probe involved generating multiple choice questions from the data obtained from interviewing. By way of example, consider the situation of an empty electric light socket. When this situation was used in interviews with students as one aspect of exploring conceptions of electric current, the situation was shown and interviewees were asked whether or not they thought an electric current was present. The interviewer then probed for reasons. Four common answers emerged: (a) No, because there can not be current flowing; (b) Yes, because if you touch it you get a shock; (c) Yes, because if you put a bulb there, it would glow; (d) Yes, because the current would be going out from the prongs.

These four common answers were then used as alternatives for the multiple choice form of the question used on later written probes of students' ideas.

Both of these forms of question were included on the test given to teachers in this study.

Advantages of These Approaches

These approaches have a number of advantages. First, the conception of concept adopted in this study (classifying attributes and listing attributes) is consistent with the LISP approach to probing concepts. Second the format of the LISP written probes does not involve responses of an unusual nature (i.e. the format is familiar to respondents). Other approaches such as concept mapping require the respondents to learn the nature of the task and the answer format before they can be successfully used. While some questions on the LISP test are unusual in the experience of teachers (for example, in asking for reasons for an answer or in considering fundamental concepts), no learning of format of task or response is needed. Third, the written test is derived from interviews, hence the test can be used as the format for the subsequent interviews. Finally, considerable data from school students who have undertaken the LISP tests exist, thus comparisons between teacher and student performance are made possible via using questions from that project.

Sample

Three hundred and eighty-eight (388) high school teachers (pre-service and in-service teachers) wrote the test. The in-service teachers constituted four groups by qualification: (a) NCE (National Certificate in Education) -- this certificate is obtained from a college of education three years after 'O' level; it is the minimum qualification for teaching in Nigerian secondary schools; the NCE teachers are often confined to the junior classes; (b) B.Sc. (Bachelor of Science), obtained three or four years after the 'A' levels; (c) NCE plus B.Sc.; (d) B.Sc., plus postgraduate Diploma in Education (PGDE). The pre-service or trainee teachers in the sample were enrolled in an NCE course.

Table 1: Sampled Population

Type of Qualification	TT	NCE	BSC	NCE+BSC	PGDE	Total
Number	137	140	79	17	15	388

Method

The method of gathering data was similar to the approaches used by LISP, as described above. The instrument consisted of questions derived from LISP. The questions for teachers were not modified, since the study was aiming to find out if science teachers had a superior conception to students. The study was also aiming to establish the feasibility of using such approaches with teachers.

Results

Two of the concepts investigated in the larger study are reported here: the concept of 'animal' and that of 'gravity'.

The concept of 'animal'. Sixteen questions were used to probe the concept of the term 'animal'. Twelve questions presented instances of animals (in order -- frog, snail, rabbit, bat, cow, worm, fish, boy and girl, fly, grasshopper, bird and lizard. Four questions presented non-instances of animals (in order -- car, lettuce, fire, grass). There were two parts to each question. First, the respondent was asked to indicate whether or not the example was an instance of animal. Second, the respondent was asked to give reasons for her or his choice. Similar to the LISP report, the appropriate attributes to appear in the reasons included heterotrophic feeding, movement, digestive system, nervous system and cellular structure (cell structure in terms of cell membrane). Respondents who classified all the instances correctly and who gave at least two of the identifying attributes were judged to have a scientific view of animals. In this regard, 40 teachers (10 per cent) were judged to have a scientific view of animals (i.e. to use the term 'animal' in a scientific sense). Fifty-four respondents (14 per cent) had difficulties with multiple group membership, and they perhaps saw only the class of mammal as belonging to the animal kingdom. Some of these groups used mammary glands and parental care as a basis for their classification. On these grounds, other classes of animals and invertebrate animals were regarded as non-instances of animals. Some respondents confused classes of animals, for example, they classified fish as reptile.

The bat, an animal that flies as well as gives live birth to its young, presented a major difficulty to about 1 per cent of the population. Some said the bat was neither bird nor animal, while others said that it could not be classified. Much confusion was evident.

Many of the teachers in the study used external physical features as a basis for judgement. For instance, some respondents regarded animals such as snails, worms and fish as non-animals because they did not possess hair on the body. Hence birds were not classified as animals because they possessed feathers and beak. Instances of animals like grasshoppers, flies, birds and bats were not considered animals by about 4 per cent of the total population because these animals could fly. Other features like shape of body, set of teeth, fins, external ear were used as the basis of judgement by respondents. About 5 per cent saw only the instances with legs as animals. Furthermore, some saw only the four-footed ones as animals; hence boy and girl were not classified as animals by them because boys and girls stood on two legs. Similarly, birds had two legs, and they were judged not to be animals.

Some 4 per cent of the respondents rejected worms, grasshoppers, birds, lizards, snails, fish, flies, bats and frogs as animals because, they said, these organisms lacked the general properties of animals. Another 2 per cent of the respondents used the mode of reproduction as a basis for their judgement about whether something counted as an animal. They explained that frogs, lizards, birds, fish, snails, worms, flies and grasshoppers laid eggs and did not feed their young with milk, so they could not be animals.

About 5 per cent of the respondents used locomotion as a criterion for classification of things as animals. Their reasoning went something like this: bats and birds are not animals because animals do not fly; boys and girls walk, frogs jump, snails, worms and lizards crawl, therefore they are not animals.

Other unlikely criteria such as parasite, senses and season were used by some respondents. For example, 2 per cent of respondents said that a worm is a parasite. It depends on a host before it can live, and thus it is not an animal. One respondent said that a worm is not an animal because it is only seen during the rainy season, whereas animals are present in all seasons.

These findings are similar to those of Bell (1981) in the Learning in Science Project (LISP). What Bell's respondents said bears remarkable similarity to the remarks and explanations given by the respondents in this study. The following is a set of examples which compares the LISP respondents with the respondents of this study.

(1) Number of legs: In both the LISP study and this study, some respondents discriminated between animals and non-animals on the basis of the number of legs. In their reasoning, four legs, many legs or no legs was a signficant, distinguishing feature of animals.

(1.1) Four legs: "Yes, it's [a cat] got four legs" (LISP). "It [a cow] is an animal because it has four legs" (Teacher). "No, bat is not an animal. It doesn't have four legs" (Teacher). "All animals walk on four legs" (Teacher). "No, boy and girl are not animals; they do not stand on four legs" (Teacher).

(1.2) Many legs: "No [spiders are not animals], because animals don't have eight legs" (LISP). "No [they are not animals], because fly, grasshopper have six legs" (Teacher).

(1.3) No legs: "No [a worm is not an animal], it's got no legs" (LISP). "No [they are not animals], because snail, worm have no legs" (Teacher). "Fly and grasshopper are insects because they have more legs than animals" (Teacher). "Frog is not an animal. Animals walk on four legs, but a frog does not walk on four legs. Boy and girl are not animals, basing it on the idea of walking with four legs. I think a boy and girl should not be animals" (Teacher).

(1.4) Two legs: "No [a bird is not an animal], because it's only got two legs" (LISP). "No [birds are not animals], birds have two legs" (Teacher).

(2) Habitat: In both the LISP study and this study, some respondents discriminated between animals and non-animals on the basis of the habitat. In their reasoning, animals lived on land.

"Yes [an elephant is an animal], it's on [the] land" (LISP). "It [a cow] is an animal because it lives on land" (Teacher). "No [a fish is not an animal], [it] lives under the water" (LISP). "No [birds are not animals], birds mostly live on trees" (Teacher). "No, fish is not an animal because it lives in water" (Teacher).

(3) Animals have fur: In both the LISP study and this study, some respondents used the covering of an animal as the attribute to distinguish between animals and non-animals.

"Yes [a cat is an animal], it's got fur" (LISP). "No [a worm is not an animal], it's got no fur" (LISP). "Rabbit is an animal because it has skin, fur and constant body temperature" (Teacher). "Snail is not an animal, no hair on the body" (Teacher). "Worm is not an animal because animals have hairs" (Teacher).

(4) Noise production: Some students in the LISP and some teachers in this study discriminated between animals and non-animals on the basis of noise production.

"Yes [a cat is an animal], [it] makes sound" (LISP). "Yes [a boy is an animal], [a boy] talks" (LISP). "It is an animal because it [a cow] makes sounds, hears" (Teacher).

Both students (in the LISP) and teachers (in this study) confused scientific characteristics of living things and the scientific characteristics of animals. In the LISP report, over 50 per cent of the pupils used characteristics of living things which do not discriminate animals from other living things (e.g., respiration, growth). About 34 per cent of teachers in this study used the same general characteristics of living things.

Many teachers in this study used some inadequate criteria for classification of an instance as an animal. These criteria included the attributes of "has life," "has blood," "has no chlorophyll," "has mammary glands" and the like.The criteria were inadequate because they were not common to all animals and they were not distinguishing attributes of the class of animals.

Of the 38 pupils interviewed in the LISP, 35 (age 10 to 15 years) could not classify all animal instances correctly. Of the 388 science teachers who wrote the test for this study, 90 could not classify all instances correctly. Another 130 teachers could classify the instances correctly, but listed only characteristics of living things, not distinguishing attributes of animals. Both the samples of students from LISP and of teachers from this study classified all the instances with four legs (e.g. cow, cat, rabbit) correctly as animals.

The concept of 'gravity'. Aspects of the understanding of the concept of 'gravity' were probed in this study with three multiple choice questions. These questions dealt with the existence and magnitude of gravity on the moon, the existence of gravity when standing on the earth and the existence and magnitude of gravity when in free fall. The results obtained from this investigation were similar to those reported by Stead and Osborne (1981) in the LISP.

(1) Standing on the moon: This question presented a drawing of an astronaut on the moon and asked if there is any gravity. Four

options were given to the respondents: (a) Yes, but much more than on the earth; (b) Yes, about the same as on the earth; (c) Yes, but much less than on the earth; (d) No, there is no gravity. The most acceptable response is "Yes, but much less than on the earth." In the LISP report, of the 258 Form Three students (Year 9 or 9th Grade), 42 per cent gave the correct response, 44 per cent said that there is no gravity, 12 per cent said much more than on the earth, while 2 per cent said about the same as on the earth. About 31 per cent of teachers sampled in this study said that there is no gravity on the moon, 37 per cent gave the acceptable response, 15 per cent said much more, 8 per cent said much less than on the earth and 9 per cent did not respond. Some of the statements from students (in the LISP study) and teachers (from this study) are presented for comparison.

(1.1) No gravity on the moon: "It's only on earth as much as we know and it's not on the moon, or anywhere like that" (LISP) "No gravity on the moon because you can continue to move along" (Teacher). "No gravity because it is the moon" (Teacher). "Well, the moon's got no gravity and you float off --and out in space, you just float around" (LISP). "No gravity because as you move further from the earth, the gravitation decreases until you get to the space, where there is no gravity" (Teacher).

(1.2) Other reasons: Some of the teachers in the sample gave a variety of other reasons to support their claim of absence of gravity. "No force of gravity in the moon because there is opposing force in the moon. In the moon, the force is acting upwards and not downwards as you have on the earth" (Teacher). "No gravity, there shouldn't be any gravity because he is standing far and we cannot measure the gravity" (Teacher). "No gravity outside the earth, the moon will not have that force of gravity" (Teacher).

(2) Standing on the earth: In the problem presented to the respondents, a diagram was presented in which a person was shown standing on the earth's surface, and respondents were asked whether there was gravity present when standing on the earth. The answer required was either "Yes" or "No." Three hundred and thirteen (313) or 81 per cent of the teachers sampled said that there was gravity. About 11 per cent said that there was no gravity, and 8 per cent did not respond. In the LISP report, 94 per cent of Third Form students said that there was gravity, while 6 per cent said, "No." Some of the reasons advanced by some teachers for saying that there was gravity on the earth included statements like, "Yes, because everything that goes up must come down. If he jumps, definitely he will come down" (Teacher). This statement is similar to a Form Four (Year 10 or 10th Grade) student's idea of gravity in the LISP report: "You throw a ball up, you know it will come down, it has to 'cos of the law of gravity. [What is this law?] What goes up must come down" (LISP).

Other reasons given by teachers included explanations such as, "Yes, because he is standing on earth and there is gravitational force acting down on him" (Teacher). "Yes, because he is on earth, that is where force of gravity acts" (Teacher).

Reasons argued by teachers for saying that there is no gravity when standing on earth included statements such as the following. "No [there is no gravity acting on the man], because if there is any gravity the man will sink [into the earth]" (Teacher). "No, what will pull him? He is already on the ground" (Teacher). "No, no gravity standing on the earth because there is nothing pulling him" (Teacher).

(3) Falling from a plane. Given a line drawing of a person in free fall from a plane, respondents were asked about the existence and magnitude of gravity. Only 82 teachers (21 per cent) said that there was gravity and that its magnitude was about the same as at ground level. (This is the most acceptable response from a scientific point of view.) A second group of teachers (27 per cent) said that there was gravity, but that it was much less in magnitude than at ground level. About 6 per cent of the teachers said that there was no gravity, and about 10 per cent did not respond. In the LISP, 26 per cent of Form Three students (Year 9 or 9th Grade) gave acceptable responses; 32 per cent said much less gravity; 31 per cent said much more gravity; 11 per cent said no gravity was present while in free fall. Examples of some of the arguments given by teachers for saying that the gravity in free fall is much less than at ground level included the following. "Yes much less than on the ground because as we move away from the ground, the distance is being increased so the gravity is going to be less. Increase in distance less force that will act on that body" (Teacher). "Less than on the ground, well, its like going in the lift. When you are inside a lift you find that you are suddenly weightless, so if you use that concept with that of a person falling from the plane" (Teacher). "Yes, much less than on the ground, it's as in the moon, the gravitational force decreases as you go up" (Teacher). "Yes, but much less than on the ground because the force of gravity keeps reducing as you go higher" (Teacher).

For saying that the gravity is much more than on the ground, some reasons advanced by the teachers included statements such as the following. "Yes much gravity pulling on him because gravity is a force that pulls something towards the earth" (Teacher). "Yes the speed will be higher, gravity is the force acting on anything towards the earth's surface" (Teacher). "Yes but much more than on the ground because of the height. On the ground, the force of gravity is zero, but as you go higher it increases so if the person is above the ground I would expect that the force of gravity would be greater than when he is on the ground" (Teacher). "Yes much more than on the ground because he is still within the earth's gravitational pull. The gravity is more up to a certain extent" (Teacher).

The findings from this study are broadly consistent with Stead and Osborne's (1981) LISP report. Teachers in the present study seem not to understand the concept of gravity. Their understanding is often not better than those of the students in LISP.

Similar to the LISP report, many teachers in this sample had a view of gravity as something that holds, pushes or pulls. Many teachers, like the students in the LISP sample, tended to consider gravity in terms of a pull from only the earth.

Conclusion

This research report has identified the beliefs and ideas of teachers with respect to two fundamental concepts in science -- animals and gravity. One of its major findings has been that lack of science understanding is not confined to students. Many science teachers do not understand some fundamental scientific concepts. Teachers' beliefs and ideas are often not superior to students' beliefs and ideas.

This study has also drawn attention to the fact that similar research approaches to those used to probe students' understanding can be used with teachers.

An important question which merits investigation is whether such naive beliefs and ideas are confined only to Nigerian science teachers. Many researchers have urged science teachers to probe their students' beliefs and ideas before a program of instruction. In the light of the findings from this investigation, it seems as if researchers will have to think twice before urging teachers to probe students' beliefs and ideas. There is an urgent need to probe science teachers' beliefs and ideas in other parts of the world.

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BOOK REVIEWS

Australian Education: Review of Recent Research. Edited by John P. Keeves for the Academy of the Social Sciences in Australia. Sydney, London, Boston: Allen and Unwin, 1987. Pp. xvi, 390. **$19.95 (Australian currency), paperback.**

Australian Education aims to provide a review of research about education in Australia over the past 20 years. The review is introduced in the Preface by means of an overview of research since the 1880s. The research review from the 1960s through the 1980s is presented in three parts: (1) background perspectives, (2) policy and practice, and (3) special programs. The first part, "Background Perspectives," includes chapters on "the disciplinary areas:" philosophy of education, history of education, family environments and educational achievement, and curricular research and development. The policy and practice section contains chapters on educational achievement, new perspectives in teaching and learning, teacher education in transition, and trends in higher education. The third part, on special programs, has chapters on gender and education, Aboriginal education, youth in transition, education for a multicultural society, and educational privilege and disadvantage.

In the Preface, it is written that "the challenge in preparing this report has been not merely to document the research that has been undertaken, although this task would be of considerable value, but also to identify the contribution that research has made to the practice of education and the thinking about educational issues in Australia" (p. xvi). *Australian Education* meets this challenge with uneven success in all three areas (documentation, practice and thought). The organisation of Part I ("Background Perspectives") into "disciplinary areas" perpetuates the conflation of (1) funds of knowledge, (2) fields of phenomena, and (3) rules for making warranted assertions, by using the term 'disciplinary areas' to name all three categories, and by failing to distinguish among the three. As for Parts II and III, there is no sound basis for attempting to maintain the distinction between "policy and practice" and "special programs." The concept of 'policy and practice' includes policies and practices for special programs in education. Although the title implies and the Preface lays claim to the presentation of a review of research about education, some of the chapters are not about education per se, but rather about how one aspect of education (formal schooling) influences or can be used to serve one cause or another (e.g., Chapter 11, "Youth in Transition," Chapter 12, "Education for a Multicultural Society," and Chapter 13, "Educational Privilege and Disadvantage").

While this volume is not an exemplary work in educological research (because of its organisational flaws, conceptual conflations, and category mistakes), it does present valuable information about the progress (and absence thereof) made over the past 20 years in research about education, and for that, it merits reading. (Editors)

Action Research in Classrooms and Schools. Edited by David Hustler, Tony Cassidy and Ted Cuff. London, Boston, Sydney: Allen and Unwin, 1986. Pp. xvi, 220. $29.50 (Australian currency), paperback.

Action Research presents a view of action research as a process in which teachers (1)identify classroom problems which concern them personally and (2) undertake systematic investigation (ideally collaboratively with their pupils and fellow teachers) for the purpose of improving the classroom situation. The editors of this book assert that they "are not attempting in this book to produce a theoretical treatise on the nature of action research," but rather they "are interested in what . . . practising teachers are actually doing to examine, explicate and improve their own practices" (p. 1). With this purpose in mind (of permitting school practitioners to report what they have done in the way of action research), the editors have assembled a collection of reports from classroom teachers, school principals and assistant principals, advisers and consultants within Local Education Authorities (LEAs) and lecturers from Schools of Education of universities and polytechnics who have worked collaboratively with schools in action research projects. (The setting is Great Britain in the first half of the 1980s.) The product is an eclectic assemblage of action research reports which treats a wide range of topics. To give structure and order to their work the editors have organised their book into three sections: (A) issues in action research; (B) action research case studies which started with individual teacher's concerns; (C) two large-scale action research projects which were initiated from concerns of agents external to schools and classroom teachers. The first section (issues in action research) contains chapters on whether action research requires sophisticated research methods, classroom enquiry as an approach to understanding children, teachers' professional knowledge, an LEA adviser's view of action research, the use of the *Curriculum in Action* materials (Open University and Schools Council, 1980) for a curriculum development project and teachers' perspectives on assigning learning tasks which match pupils' attainments and abilities. The second section includes chapters on procedures for developing an open classroom situation, analysis of school pupils' responses to non-literal art objects, effective steps in developing deaf pupils' appreciation for the purposes and usefulness of literacy, effective ways for a teacher to cope with changing from one school to another, using the *Action Research Planner* (S. Kemmis *et al.*, 1981) in a mathematics unit for the M.Ed. program and effective ways of initiating and encouraging action research in comprehensive schools. The third section reports on the use of action research in two large-scale projects which were initiated by agencies outside of the schools, viz. the Girls into Science and Technology project (GIST) and the Alternative Curriculum Strategies project (ACS).

Action Research is a work which clearly uses the educological perspective in its discourse. It is also clear that its editors and contributors have used a balance of analytic, empirical and normative disciplines in their investigations. These are good features of the book. However, the book is not without its silliness and contradictions. There are many, but two examples will suffice to illustrate the point. One example is the assertion that ". . . experience itself cannot be passed on" (p. 26), but it is stated by the same author six pages later that "some of the teachers, seconded in earlier years [to be involved in action research] . . . meet at the seminars for seconded teachers, *thus enabling experience to be passed on* from one year to the next" [our italics] (p. 32). A second example is the statement that "action researchers use the literature only to the extent that there is something significant and germane to the issue under study; they do not genuflect to Pavlov and Piaget in order to impress their readers!" (p. 24). The author of this statement is quite mistaken to maintain that this is somehow a distinguishing characteristic of action research about the educational process. All good educological researchers (not only those committed to action research) use the literature only to the extent that there is something significant and germane to the research issue. No good educological researcher quotes research results gratuitously or pretentiously.

The way in which the editors and contributors of this book have presented their reports as exemplars of action research necessarily implies that action research is a process which combines (1) systematic investigation of educational issues with (2) uses of the results of the investigation to achieve desirable situations within the educational process. This, in turn, necessarily implies that action research, when it is functioning properly, is a process which produces praxiological educology (i.e. produces knowledge about effective practices for the educational process). The editors and contributors do not use the term 'praxiological educology', but it is clear from their discourse that they do mean the concept impled by this term in connection with the products of action research.

Overall, the book is quite readable, even with the occasional self contradition or absurdity. Those who take a social reconstructionist view of action research will argue that the editors and contributors do not take the concept of action research far enough, and thus the book provides additional grist for the mill of argumentation. Setting that argument to one side, the book should be of special interest to students of praxiological educology, and it should be of general professional interest to all teachers, at any level -- preprimary, primary or tertiary -- who have a concern for finding ways and means of improving classroom practices through their own systematic investigation, collaboration with pupils and peers and development of well founded teaching practices (i.e. practices confirmed by necessary and sufficient evidence adduced from systematic investigation). (Editors)

Individual Development and the Curriculum. Kieran Egan. London, Melbourne, Sydney, Auckland, Johannesburg: Hutchinson, 1986. Pp. xi, 174. $27.50 (Australian currency), paperback.

The first edition of this book was published by Oxford University Press under the title of *Educational Development* (1979). This second edition (the Hutchinson edition) retains the same basic argument as the original, and it extends and refines the original thesis.

The book explicates a comprehensive theory about the educational process. It offers an explanation of how the interests, capabilities and motivations of students can best be accommodated by the most appropriate teaching and studying activities and by the most suitable content (or subject matter) so that the students can be empowered to achieve a set of ideal educational outcomes.

The theory offered by the book posits four stages of interests, capabilities and motivations in the course of human maturation from childhood to adulthood within Western liberal democratic societies. Egan gives the stages the names of mythic, romantic, philosophic and ironic, and he acknowledges that the stages parallel Plato's (from *The Republic*) stages of *eikasis, pistis, dianoia* and *noesis* (p. 76). His claim is that every individual, given the proper circumstances, proceeds through these stages of educational development. His claim is also that when an individual is within a stage, she or he is sensitive to and will benefit educationally from certain kinds of interactions with teachers, content and fellow students. Appropriate educational experiences within each stage empower the student to mature cognitively and intellectually. Likewise, inappropriate experiences and content impede the educational progress of the student. If all goes well, he argues, the eventual educational outcome will be (and ought to be because it is a worthwhile outcome) a mature understanding of the world and of one's experience within it.

The book is organised into seven chapters: the mythic stage, the romantic stage, the philosophic stage, the ironic stage, some comments on the stages, sensitive periods and content and curriculum areas. There are also introductions to the Hutchinson edition and the first edition and a section on conclusions, which summarises and highlights the arguments for the theory, and a useful index.

From the educological perspective, this book is a very important one -- much more important than, for example, the works of Piaget, Maslow, Ausubel, Gagne, Erikson and Bruner. Egan makes the very sound point in his introduction that "at present, it seems that educational [i.e. educological] research is dominated by psychological theories that lead to knowledge of psychological value and interest but that offer only occasional 'implications' for education. An educational [i.e. educological] theory of learning, development, or motivation should be composed from, and focus back onto, those phenomena of most interest to educators [i.e. teachers and educologists]. Such a theory will likely involve a different level of generality and a different range of phenomena from those which interest psychologists, or sociologists, or genetic epistemologists" (p. 5). So, Egan uses the educological perspective where it is appropriate to use it, and he eschews other perspectives where it is not appropriate to use them. In addition, Egan recognises that the sorts of educological questions which he addresses require a sound use of analytic, empirical and normative disciplines. He does not mistake a normative question for an empirical one, nor an empirical for an analytic one. He properly argues that "any developmental theory should indicate an end toward which the process develops, and being explicit about this end should involve some image of what is desirable as a product of the process" (p. 164) "An educational [i.e. educological] theory must be . . . explicit about the desirable end product, and, consequently, it will have as a central component normative claims" (p. 165). He recognises that his claims for what constitutes an ideally educated person are normative ones, and he treats them as such. He acknowledges that questions of the meaning of terms require the use of analytic discipline, and he uses the rules, procedures and techniques of that discipline appropriately. He accepts that questions which require the evidence from observation are empirical, and he calls upon that empirical discipline when it is indicated.

Previous critics have charged Egan with having an insufficient empirical basis for his theory. He has answered these critics in two ways. First he says that he is "trying to build a coherent overview of the process of education from a wide range of empirical observations. The oddity of the empirical base is that it is largely uncontentious. It is not made up from the implications of insecure research findings, but rather from observations about people's intellectual capacities and performances that can be confirmed by casual observation or by analysis of characterisitics of thinking evident in stories, games, and other imaginative activity. These kinds of observations, being largely uncontentious, are not the kind of things one need set up research studies to establish, but they are, nevertheless empirical" (p. viii). Second, Egan says that "Having articulated what I claim is such a theory, why have I not engaged in the empirical research whose (presumed) support would have enabled me to put it forward with greater security? Had I but world enough and time, it would no doubt have been desirable to have gone about it that way. But even if I had the research skills, it would take a single person an inordinate amount of time to develop adequate empirical support for the full range of claims made by this theory. Ideas must precede data; what I am doing here is offering some ideas that might help us to get at data of educational significance. And the principle of division of labor must operate here" (pp. 162-163). Both of these are fair comments, and they present other educologists with the challenge of conducting research which uses empirical discipline to adduce evidence which either confirms or falsifies the empirical claims implied by the theory.

The fact that Egan's theory makes itself available to empirical testing is part of the evidence of its adequacy. As Egan has so clearly stated, we must judge the adequacy of a theory "by how well answers are produced for questions like the following. How adequately does the theory make sense of the phenomena it purports to deal with? How sensibly does it identify and define what phenomena should form the focus of a theory of educational development? How well do its categories, distinctions, and characterizations cohere with our own observation and experience? How well do these categories help us think more fruitfully about educational development? How accurately does the theory embody all the relevant data? Are there some data which cannot be accommodated to this theory? How well does the theory focus on the things we intuitively consider centrally important to educational development? Does it generate new claims, the testing of which will create knowledge of educational significance?" (pp. 165-166). Certainly, Egan's theory meets the criterion of focusing upon the educational process per se. It generates new claims which can be tested, and when tested, promise new knowledge of educological significance. It challenges educologists to think more fruitfully about the educational process.

Egan writes in a most engaging manner, and his book is highly readable. Consider this statement, as an example which combines wit, style and wisdom: ". . . a mind stocked with fine poetry and prose enriches both the rhythm of one's language and the range of one's thought and sentiment and provides an infinitely rich treasure that can be drawn on at will through the rest of one's life. . . . only people without such treasures depreciate their value, and it is inappropriate to accept the advice and guidance of the ignorant in matters of education" (p. 49). A second example is on pp. 120-121: "By the mythic stage children have begun the great adventure of trying to make cognitive sense of the experience of being human in the world. Their most implicit question is, 'What's it all about?' Now, we know what it's all about. There is no need to be handwringing, limpwristed, or pettifogging about it, or, worse, to try to hide it from children by keeping them in a never-never land of provincial trivia. What it's all about is a life and death struggle against ignorance, fear, poverty, and hatred; it's a struggle for security, love, confidence, and knowledge. And at its heart, whether one is atheist or religious, it is infused with mystery -- most basically the mystery of why there is existence rather than non-existence." One rarely encounters stirring prose such as this in the explication of a coherent and comprehensive theory about the educational process.

This book is to be recommended not only to all educologists (for them, it is compulsory), but also to teachers educators, curriculum developers and evaluators and last, but not by any means least, classroom teachers. This book has something important to say to them all. (Editors)

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about the Educational Process
from an Educological Perspective

1988, Volume 2, Number 2

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1988, Volume 2, Number 2

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning process, learning outcomes, learning environments, learning goal structures, educational policies, curriculum, supervision, administration, counseling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative), empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding towards several ends, e.g. towards heightened sensitivity for educational situations, effective participation within educational situations, the articulation of sound theory about educational situations and resolution of problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counseling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical; experimental and non experimental; historical and philosophical; jurisprudential, interpretive, critical and evaluative; scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are published. Contributers seeking publication of manuscripts should submit an abstract (100-200 words) and four copies of the manuscript. Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 in) paper with uniform margins (3 cm or 1 in, both sides, top and bottom). To ensure anonymity in the reviewing process, the author's name should appear only on a separate title page. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on the first page. The length of manuscript should range between 5,000 to 15,000 words. The bibliography should be arranged in this form: Author (date): Title. Place: Publisher. Referencing in the text should be in this form: (Author, date, pages). Footnotes of explanatory text should be placed at the end of the text, but before the bibliography. Diagrams and charts should be camera ready for printing on offset.

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions. The educological perspective in discourse treats the educational process as the dependent variable or as the central concern of the problem being addressed in the discourse. The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic, empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions. The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process.

For authors seeking further guidance as to what constitutes educology and the educological perspective, two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C.: University Press of America, 1981) and in "Education, Educology and Educological Discourse: Theory and Structure for Education and Constructive Action in Education" (J.E. Christensen, *International Journal of Educology*, 1:1 (1987), 1-32).

Manuscripts, editorial correspondence and inquiries about submissions should be sent to: The Editors, *The International Journal of Educology*, Educology Research Associates, Box 383 GPO, Sydney, NSW 2001, Australia

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Editorial

The Need for Educological Research in the Areas of Secondary School Retention Rates, Educational Pathways and Recurrent Education

The Situation as We Know it

Grades (or Years) 10-11 in secondary schools remain a serious educational, social and economic concern for Australian society. It is at this level of school that 45-50 per cent of the nation's 15-16 year olds have, over the years, consistently discontinued their formal education and sought entry into the work force. (This is in contrast with Australia's OECD trading partners and the U.S.A., which have retention rates of above 75 per cent.)

The changing nature of jobs, with ever increasing demands for extensive technical expertise and mature judgement, has presented fewer employment opportunities for young, inexperienced and unqualified workers. All indications are that there is an irreversible trend towards fewer and fewer employment opportunities for youths and adults with only 9-11 years of basic education. To be useful to the workforce, one needs more than what a basic 10-year school experience can provide.

Those who have discontinued their formal education at ages 15-16 have thus found themselves both out of school and out of work. They have had few or no prospects for self improvement. Their withdrawal from school has blocked their pathways to personally satisfying, economically beneficial and socially useful occupations or careers. Their withdrawal has also diminished their chances to participate in the necessary recurrent education which would keep the pathways open for their future development of occupations and careers. Without the opportunities and the motivation to engage in recurrent education, their chances to improve their employment prospects and to contribute to the economic production and wealth of the nation have been seriously handicapped (if not altogether eliminated). This potential labour market has gone unused because it has been under trained, under educated and under qualified.

Besides the economic waste, low retention rates in Grades (or Years) 10-11 in secondary school have their consequent personal, social and political costs. The personal costs include low self esteem, aimlessness, irresponsibility, unhappiness, drug abuse (including nicotine and alcohol addiction, as well as other so-called "hard" drugs), idleness and mindless violence to self (e.g. suicides) as well as to others (e.g. assaults and rape). The social cost includes the harm, theft and destruction (e.g. from vandalism and hooliganism) which disenchanted, bored and unemployed youths exact from a society which has failed them educationally and economically. The political cost is manifested through nonregistration for voting, boycotts of elections, informal (invalid) ballots and a general apathy towards the democratic processes of advocacy through elected representatives for redress of grievances, improvement of conditions and striving for a just and equitable society.

Questions which Need Answers

One of the obvious reforms indicated by such a situation is to provide courses and subjects which motivate students to remain in school. In addition, those subjects must be selected and structured so that they promote employment prospects in such a way that the students' interests, talents and expertise matches the economic needs of the society. But in order to do this effectively, the processes of policy formulation and implementation need solid factual information and sound explanations which tie the known facts into an understandable picture which gives clear guidance for efficacious action.

There is a need especially to call upon educological researchers to resolve a set of critical questions, the answers to which are crucial for the reformative process to proceed with responsible foresight. Those questions are: (1) Why do so many students leave school at Grades (or Years) 10-11? (2) What needs to be done to motivate those students to remain in school through completion of Grade (or Year) 12? (3) What courses and subjects should be offered in secondary schools so as to achieve a nexus between employment opportunities and formal education? (4) What needs to be done to keep educational pathways open to youth so that they can knowingly make responsible and realistic occupational and career choices and pursue their aspirations through secondary and tertiary studies? (5) What needs to be done to assure that youth and young adults have the motivation and opportunity to participate in recurrent education at the secondary and tertiary levels which contributes to the realisation of their occupational and career aspirations? (6) What needs to done to assure that the occupational and career aspirations of youth and young adults match the needs of the economic system which requires labour with specific technical expertise?

The importance of the first of these questions (why do so many students leave school?) has already been recognised to a limited extent by funding authorities, and some investigation have been conducted to resolve the question. But for issues as important as these, it is inadequate to rely upon the findings of one investigator or one team of investigators alone. Research results require corroboration. Moreover, it is insufficient to be satisfied with the funding of only one of the questions in this list, just as it would be inadequate to be satisfied with only diagnosis of an illness. Prescription and prognosis are also needed. That is what makes the other five questions in the list crucial. They fulfil the prescriptive and prognostic functions. All three -- diagnosis, prescription and prognosis -- are needed in dealing with the issues of secondary school retention rates, educational pathways to occupations and careers and the proper role of recurrent education.

The Inadequacy of Good Intentions

It is important that these questions not merely be included on the national agenda for funded research, but that they be given substantial prominence as well. Bitter experience has taught us that good intentions are not enough to bring about meaningful educational reforms, especially if those reforms are intended to have genuine flow-on benefits for the economic system, the political processes and the general stablity and well being of the society. Reformative action within the schools requires accurate information and sound educological explanation to guide the reformative process sensibly, and the source of reliable information and useful, productive insights about education is well disciplined educological research.

Editors

International Journal of Educology, 1988, Vol 2, No 2

An Educology of Socio-Cultural Factors in Science Classrooms

Olugbemiro J. Jegede
Ahmadu Bello University
Zaria, Nigeria
Peter A. Okebukola
Lagos State University
Lagos, Nigeria

ABSTRACT

To date, a considerable amount of evidence has been generated which suggests that learning outcome variance is, in part, attributable to the teaching-learning environment of a school. As a result, there has been a move amongst researchers towards the in-depth study of classroom climate -- its nature and the way it can be structured to improve students' learning in science. Several classroom climate variables which relate positively to students' achievement have been identified. These variables include task orientation, order and organisation, teacher support, instructional strategies, teacher control and innovation, to mention but a few. Inspite of all of these research efforts, the socio-cultural aspect of the classroom environment has surprisingly not received as much attention as it deserves from investigators. A good starting point for the empirical study of socio-cultural influence in science classrooms is the search for an instrument which can be used to identify the socio-cultural influences and their effects. One major purpose of this study, therefore, was to develop an instrument which is reliable and useful in measuring socio-cultural factors in science classrooms. A second major purpose was to find what relationship exists between student anxiety and socio-cultural factors which affect the teaching and learning of school science. In this study, an instrument for measurement was developed, the "Socio-Cultural Environment Scale" (SCES), and it was used to identify those elements of the socio-cultural environment which correlate

significantly with student anxiety within science classrooms. Science teachers need to be made aware of these socio-cultural elements so that appropriate intervention strategies may be developed to reduce anxiety of students for science. Further research is needed to validate or revise the SCES with the ultimate objective of getting the best measure of the socio-cultural environment in science classes

The Problem

A significant amount of evidence has been accumulated to date which supports the assertion that learning outcome variance is, in part, attributable to the teaching-learning environment of a school (Moos, 1979; Rentoul and Fraser, 1979; Fraser and Fisher, 1982; Manor, 1987). As a result of this, there has been an observable shift amongst researchers efforts towards the in-depth study of classroom climate - its nature and the manner in which it can be structured to improve students' learning of science. Several classroom climate variables which relate positively to students' achievement have consequently been identified. The variables include task orientation, order and organization, teacher support, instructional strategies, teacher control and innovation, to mention but a few (Bybee, 1977).

Inspite of all these efforts, the socio-cultural aspect of the classroom environment has surprisingly not received the much needed attention it deserves from investigators. The educational process, of which science education is a subset, is a cultural and human activity which deals with the transmission of the cultural heritage of a people (Erickson, 1984; Maddock, 1984; Havifeldt, 1986). The educational process, as Wilson (1981) points out, does not take place in a cultural vacuum. Although all teaching and learning of science have some common ground in all cultures, it is false to say that all cultures learn science and scientific concepts in the same way. Several critical interactional variables come into play, and they relate to the geographic, social, historical and world views of a particular society (Mead, 1961; Champagne, 1984; D'Ambrosio, 1985).

Whereas the research literature suggests strongly that these critical variables are attendant to effective guided study and achievement of intended learning outcomes within the social and cultural dimensions of the classroom environment (Bajah, 1975; Kay, 1975; Dyasi, 1977; Driver, 1979), empirical evidence for or against this theoretical position has not been forthcoming (Jegede, 1987; Jegede and Okebukola, 1987).

The experience of undertaking guided study of the natural sciences often calls into question beliefs and practices which are part of the contemporary culture. As noted by Gallagher and Dawson (1984), the values of youth are influenced by the cultural system in which they are reared. This, as rightly observed by Gallagher and Dawson, can be counter scientific, for a variety of reasons, including the myths, superstitions, beliefs or world views held by a particular group of people. These values and belief systems strongly influence attitudes, thought and behaviour and consequently the desire to study and learn science by pupils, their undertanding of it and their ability to appy it to both within and outside school. In recognition of the significant role of socio-cultural factors in science classrooms, researchers are now making efforts to call attention to, and encourage serious consideration of, socio-cultural background of pupils which affect their learning and understanding of science (Gallagher and Dawson, 1984).

A good starting point for the empirical study of socio-cultural influence in science classrooms is the development of an instrument which could be used to identify the influences. It became, therefore, a major purpose of this study to develop an instrument which is reliable and useful in measuring socio-cultural factors in science classrooms. A second major purpose conceived for this study was to identify what relationship exists between student anxiety and socio-cultural factors which affect the teaching, guided studying and learning of school science.

Several sound reasons can be cited to justify the focus of this study upon anxiety and socio-cultural factors. First, anxiety has been shown to be a serious impediment to the students' classroom functioning and achievement of important cognitive and affective outcomes (Spielberger, 1966; Gaudry and Spielberger, 1971; Tobias, 1979; Fraser, Nash and Fisher, 1983; Okebukola and Jegede, 1987). Second, establishing the relationship, if any, between anxiety and socio-cultural factors would help put in proper perspective the means of reducing anxiety in science classrooms as well as the role which socio-cultural factors play in students' anxiety in the guided study and learning of science. Third, in developing, non-Western cultures where scientific knowledge and interpretations of natural phenomena, of instructional methods and of teacher and student behaviours are at variance with the prevailing global conventions, the socio-cultural dimensions of anxiety become very important (Jegede, 1987). The findings of such a study would have far-reaching implications for the educological conception of socio-cultural factors in cognition and learning of science and for ways in which science teachers might manipulate the factors within their classroom environments to reduce student anxiety to the barest minimum.

Measuring Socio-Cultural Factors

In this study, an instrument to measure socio-cultural environment was developed in a series of steps. First, a thorough search of the research literature was conducted, and from it, seven descriptors or indicators of the socio-cultural environment were isolated. These seven descriptors were taken to be key indicators of socio-cultural environment, and a set of items was generated for each of the seven indicators. Each item was given a three-point reponse format of "Never," "Sometimes" and "Often." An example of an item is as follows: "My friends expect me to do well in science." Response: "Never, sometimes, often." Approximately 30 per cent of the initial 50 items assembled were negatively worded to check, in some measure, the reliability of responses. The items were then subjected to a process of validation by expert judgement. Each item was submitted to a set of sociologists, anthropologists, science educators (i.e. science educologists) and science teachers for their scrutiny and comment. After the validation process was completed, the instrument was revised in relation to the recommendations made by the validators. As a result of the revision process, the number of predictors was reduced from seven to five and the number of items from 50 to 30. The set of 30 items was given the name of

"Socio-Cultural Environment Scale" (or SCES). The SCES subscales and examples of items corresponding to the subscales are as follows:

Subscale 1: Authoritarianism (Nature of the Class)

Examples of Items for Subscale 1:

1 The African culture emphasizes respect for elders' (teachers') point of view.
2 Students freely express their mind during science lessons

Subscale 2: Goal Structure (Cooperative, Competitive or Individualistic)

Examples of Items for Subscale 2:

1 Students work cooperatively in groups during science activities
2 The science teacher provides projects that encourage cooperative group work

Subscale 3: African Worldview (Beliefs and Superstitions)

Examples of Items for Subscale 3:

1 Traditional beliefs have scientific explanations
2 Supernatural forces control events and happenings in the world

Subscale 4: Societal Expectation (Motivation from Society)

Examples of Items for Subscale 4:

1 My friends expect me to do well in science
2 The prestige science enjoys in the society is responsible for my studying it

Subscale 5: Sacredness of Science (Magic or Mysticism)

Examples of Items for Subscale 5:

1 Science concepts have magical explanations attached to them
2 The things to learn in science are strange to me

The preliminary field testing and construct validation involved administering the 30 items in the five subscales to a sample of 707 students. The students were in classes (or years) 4 and 5 of secondary school science (senior secondary school students), and they were randomly drawn from urban and rural areas in four states of Nigeria. The sample, which was made up of 470 boys and 237 girls, had an age range of 14 to 19 years, with a mean age of 17.

Table 1, which contains the descriptive statistics of the sample's response to the SCES, indicates that the inter-item covariances ranged from -0.135 to 1.408, while the inter-item correlation ranged from 0.48 to 0.96.

Table 2 shows the internal consistency reliability (alpha coefficient) obtained for the sample. The alpha coefficient ranged from 0.88 to 0.96 with a Cronbach alpha reliability of 0.92 for the sample in this study, thus indicating satisfactory internal consistency reliability for all 30 items of the subscales.

Table 1
Descriptive Statistics of the Students' Responses to the Items of the SCES

	Mean	Min.	Max	Range
Item variance	2.051	0.685	3.244	2.558
Inter-item covariance	0.458	0.135	1.408	1.544
Inter-item correlation	0.583	0.481	0.964	0.751

Table 2
Alpha Reliability of the SCES Items

Items	Alpha Co-efficient
Authoritarianism	
1 The science teacher knows all the answers to scientific problems	0.89
2 Students freely express their mind during science lessons	0.89
3 Students are expected to question the science teacher on what they do not understand	0.89
4 The African culture emphasizes respect for elders' (teachers') point of view	0.89
5 Science students should be prepared to answer teachers' questions	0.96
6 Science students initiate talk during science lessons	0.93
Goal Structure	
7 The spirit of individual competition is encouraged in our science activities	0.89
8 Students work cooperatively in groups during science activities	0.89
9 The teacher is concerned that every body understands what he teaches	0.88

10	The teacher provides projects that encourage cooperative group work	0.88
11	Traditional games are used as part of science teaching activities	0.89
12.	Group activities assist our learning of science	0.88
African World View		
13	Traditional beliefs have scientific explanations	0.96
14	Traditional beliefs hinder the learning of science	0.89
15	Supernatural forces control events and happenings in the world	0.89
16	My parents accept my scientific explanation of natural occurrences like rainbow, rain-making, etc	0.88
17	What is learnt in science relates to day-to-day life experiences	0.88
18	Only students brought up by educated parents do well in science	0.89
Goal Expectation		
19	My friends expect me to do well in science	0.91
20	Learning science is seen as a special thing	0.92
21	My parents take personal interest in my study of science	0.89
22	I study science in order to understand a science based career in the future	0.88
23	I believe the government is interested in my studying science	0.89
24	The prestige science enjoys in the society is responsible for my studying it	0.89
Sacredness of Science		
25	Science concepts have magical explanations attached to them	0.94
26	The things I learn in science are strange to me	0.91
27	To study science requires special intelligence	0.90
28	The science concepts learned at school conflict with what I already believe	0.91
29	Science can be learned by any willing student	0.89
30	Only above average Africans should aspire to be scientists	0.88

A factor analysis was undertaken to accomplish three things. First, it was done to discover underlying factors and patterns among the variables. As stated by Ferguson (1981), one purpose of factor analysis is to describe the configuration of vectors in a parsimonious way and also in such a way as to reveal its structural properties. Second, it was done to find out whether the construct of socio-cultural entity had been well established by the instrument. Third, it was done as an appropriate procedure for development and refinement of the SCES.

Table 3
Factor Analysis of the SCES Items

Item	1	2	3	4	5
1		0.43134			
2		0.49243			
3		0.42247			
4		0.42887			
5		0.50926		0.30992	
6		0.54711			
7		0.47314	0.37799		
8		0.59605			
9		0.63612		0.30336	
10		0.39698			
11		0.51287			
12		0.42391			
13	0.68965				
14	0.64175				
15	0.60058				
16	0.67201				
17	0.67676				
18	0.70404				
19	0.68321				
20	0.79819				
21	0.76739				
22	0.72938				
23	0.75285				
24	0.61131				
25	0.62210				
26	0.66071				
27	0.64886				
28	0.60944				
29	0.64286				
30	0.68906				

Principal factoring with more than five interactions was undertaken with the terminal solution determined after varimax rotation with Kaiser normalizations. Two factors emerged with 25 variables having eigenvalues equal to or greater than 1.0. The factor structure is as shown in Table 3.

What this indicates is that the five subscales, when subjected to factoring, have emerged under two major clusters. The first cluster consists of the authoritarian and goal structure subscales, while the second cluster consists of the three subscales of African worldview, societal expectations and sacredness of science. These two clusters, to our mind, are *social* and *cultural* , respectively, and they establish the construct of socio-cultural entity of the SCES instrument.

Measuring Anxiety

The instrument used for the measurement of anxiety was the Docking (1978) modified "Affect Adjective Checklist" version of Zuckerman (1960). See details as contained in Fraser, Nash and Fisher (1983). The instrument has been found to have a good concurrent validity (with correlations of 0.62 to 0.74 with other measures of anxiety) and good reliability (test retest) of 0.83.

The instrument was administered on the same day to the entire sample of 470 boys and 237 girls. Using the Spearman Brown split-half procedure, we found that it had a reliability of 0.82 with the Nigerian sample.

Relationship Between Socio-Cultural Factors and Anxiety

The need to seek a relationship between socio-cultural factors and anxiety derives from the assumption that, since socio-cultural factors may act as impediments to effective guided study and consequential learning of science, they could be a source of anxiety in the classroom and indeed might, with a non-Western sample, account for the bulk of anxiety source for science learners. The relationship between socio-cultural factors and anxiety was investigated by using the mean performance of the 707 students as the unit of statistical analysis. The correlational analysis which was done involved associating sample mean anxiety scores with sample mean scores on each of the five subscales of the SCES. Table 4 shows that 4 of the 5 subscales had significant correlations (p was less than 0.01) with anxiety. The interpretation of these important findings is that anxiety state of the student rises concomitantly with the socio-cultural effects of authoritarianism, goal structure, African worldview and societal expectation.

Table 4
Sample Item per Each Subscale of the SCES and its Relationship with Anxiety

Subscale	Sample Item	Relationship with Anxiety (r)
Authoritarianism	The African culture emphasizes respect for elders (teachers') point of view.	0 45*
Goal structure	Group activities assist our learning of science	0 24*
African worldview	Traditional beliefs hinder the learning of science	0 32*
Societal expectation	Learning science is seen as a special thing	0 33*
Sacredness of science	Science concepts have magical explanations attached to them	0 03
	Multiple correlation	0 59*

*p is less than 0 01

A multiple correlation analysis, which Fraser, Nash and Fisher (1983) believe provides a more parsimonious picture of the joint influence of set of environmental variables on anxiety, was done between the data obtained for the five subscales pooled together and anxiety scores of the study sample. Table 4 reveals that the multiple correlation between the set of socio-cultural scales and anxiety was large (R - 0.59) and statistically significant (p is less than 0.01).

Implications

One of the primary purposes of this study was to develop a valid and reliable instrument that is usable by teachers for the measurement of the socio-cultural involvement in science classes.

This intention was met with the development of the Socio-Cultural Environment Scale (SCES), which exhibited acceptable psychometric characteristics.

The bipolar dimensions (social and cultural) which were revealed by factor analysis endorsed the construct validity of the scale. The five elements within the two dimensions have support from research literature as being indicative of the socio-cultural environment in science classes (Fraser, 1985; Hvifeldt, 1987; Oguniyi, 1986). The first element in the social dimension is authoritarianism. This is one of the most important learning variables (home or school) that is adjudged to influence classroom behaviour. The idea that "elders know all" is pervasive in African societal interaction. This is a variable to be reckoned with since science itself does not claim to have all the answers. Science is a process of finding out, and dogmatism is not part of the enterprise. The identification and measurement of the level of authoritarianism would therefore seem to be important in the teaching, guided studying and learning of science. SCES provides a valid and reliable means for conducting this measure.

The nature of the interaction with respect to goal structure is also important in the social dimension of learning in science classrooms. Cooperative group work, working individually and competing with others are the three major ways of interacting in the class. The disposition of the individual student to prefer one of these three ways is idiosyncratic. The influence of the three ways on science learning has also been shown to vary (Okebukola, 1986). It is on this basis that the measurement of the goal structure can be deemed to be important with respect to learning science in classrooms.

The second dimension of interest in this study is cultural. Several years of research have led to the documentation of the impact of culture on learning (e.g., Bajah, 1975; Dyasi, 1977).

As far as science learning goes, the worldview, societal expectation and perception of science are important cultural variables (Gallagher and Dawson, 1984). The science teacher should therefore be able to measure and address these variables when instruction in science is progressing. SCES provides a valid and reliable means of such measurement. In the SCES, 18 items clustering around the three elements of African worldview, societal expectation and sacredness of science provide measures for this cultural dimension.

For the African worldview component of SCES, traditional beliefs in supernatural forces and cosmological orientations were of interest. For societal expectations, the influence of parents, peers and others in the society as being culturally coloured was the focus of measurement. Sacredness of science has to do with the general conception of the structure and nature of science. It would appear therefore that the major elements in the socio-cultural dimensions of the learning environment in science have been included for measurement in SCES. Teachers, administrators, counselors and curriculum developers can use this instrument for a variety of purposes with the ultimate intention of improving the teaching, guided studying and learning of science.

The second purpose of this study was to examine the relationships between measures of the socio-cultural environment in science and anxiety. We found authoritarianism, goal structure, African worldview and societal expectation, which are measures of the socio-cultural environment, to be correlated positively with anxiety. This translates to mean that a high level of these socio-cultural factors would engender a high level of anxiety. The findings of Fraser *et al.* (1983) would seem to be in firm agreement with these results.

Authoritarianism, which is the assertiveness of the authority structure in a home, school or social group unit, may relate to anxiety by virtue of the characteristic demands of that authority structure. In an attempt to meet the demands of the authority structure, the individual's anxiety arises from fear of failure in meeting expectations. For instance, if the authority structure implies that the science teacher is always right, fear of self-expression develops in the student, and anxiety level rises concomitantly.

The relationship between goal structure and anxiety on the other hand, can be explained on the basis of the established relationships between cooperation, competition and anxiety. Cooperation has been shown to reduce anxiety (Fraser *et al.*, 1983) while competition boosts it. The science student working in a group with others feels secure in the group since she or he shares ideas and receives explanations of difficult concepts from peers. The student is thus more relaxed to study and learn, and anxiety levels about science learning are reduced. Conversely, in an environment where competition is prevalent, the student's anxiety level rises as a result of the desire to out perform others in the group.

African worldview correlated significantly with anxiety in this study probably because of the conflicts in the positions of traditional beliefs and the epistemology of science. Explanations of events and happenings in the world in the traditional systems of thought are different from how science would want us to view the world. This fundamental conflict in major areas may be responsible for the relationship that was established in this study.

The expectations of the society were also found to be significantly correlated with anxiety. The desire to meet expectations of parents, peers and others in the community with regard to doing well in science may be the arousal factor that triggers off the feeling of dread or foreboding (anxiety). For instance, if my friends expect me to do well in science (item 19 in the SCES) and my parents take a personal interest in my study of science (item 21), the student is on his toes in the science class in order to ensure that the friends and parents are not disappointed by his performance. This desire of wanting not to let down friends and parents is anxiety producing and could have accounted for the relationship established in this study between anxiety and societal expectations.

Conclusions

The results of this study would appear to have important implications for inservice and preservice science teachers. In the first place, an instrument, the SCES, is now available for the measurement of those sectors of the socio-cultural environment that are important in science teaching, guided studying and learning. Secondly, those elements of the socio-cultural environment which correlate significantly with anxiety have been identified. Science teachers need to be aware of this so that appropriate intervention strategies may be developed to reduce anxiety of students to science learning. Further research is needed to validate or revise the SCES with the ultimate objective of getting the best measure of the socio-cultural environment in science classes.

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An Educology of Democracy: Democracy's Imperative for Holistic Evaluation in Education

Terence J. Lovat
Hunter Institute of Higher Education
Newcastle, NSW, Australia

ABSTRACT

Only those educological evaluation procedures which aim to emancipate people and extend liberty and justice in society are appropriate for education in a democracy. Democracy requires a requisite set of attitudes and a necessary range of knowing among its citizens in order to make it function properly. Democracy implies the imperative that its educational processes promote these requisite attitudes and range of knowing among its citizens. Ranking high among the necessary skills is that of being able to engage in sound, well informed, fair and participatory evaluation. However, the educational processes within those Western societies which pride themselves for their democratic ways have not kept pace with the rhetoric in those societies about the imperative for democratic distribution of knowledge and power. As noted by Sarason and Apple, modern forms of educological evaluation can be even more sinister in the processes of exercising control and repression over students than more traditional modes. However, there is a way out: action research theory. It holds promise as an avenue for developing criteria which are appropriate for educological evaluation (i.e. evaluation of education) within a properly functioning democratic society.

Education for Democracy

It would appear to be self-evident that the education system within any society should be serving the ideals and values which are normative and often indispensable to the very survival of that society. Within a society which is broadly described as a democracy, therefore, it could be considered mandatory that the education system be made to strive to produce the kinds of citizens who can cope with life in a democracy and who can further its ideals.

In turn, this vision of education -- a process of teaching, guided studying and learning which promotes the growth of, and skills related to, democracy -- would seem to require, among other things, an educological evaluation procedure which encourages formation and growth of the powers of self-direction, critical appraisal and responsibility to self and others -- attributes which are necessary to the maintenance of the democratic society. In order to be effective, this educological evaluation procedure must be open to all involved in the educational proposal which is being subjected to evaluation. This would include parents and the wider community, teachers *and* students. Students must, by necessity, be included in the process because, after all, they represent the primary focal group in curriculum development. Any educational proposal will either further the students' democratic participation or defer it.

Although desirable, it is doubtful whether such parameters are at all prominent in those curriculum models which have been influential in the design and development of educational proposals over recent years within Western democratic societies.

Curriculum Development Models and Evaluation

Perhaps curriculum models, as much as any other instruments in education, reflect a society's basic power and status structures and, polemic notwithstanding, its fundamental resistance to change. The research of Seymour Sarason (1971) seemed to confirm that schooling in Western democractic societies basically had not changed for decades. Michael Apple criticized what was then conceived to be modern schooling for being "instrumental in confirming the existing distribution of knowledge and power" (1974:6).

Among those aspects of school life which had contributed to the undesirable state of affairs in schools which Sarason and Apple slated, evaluation procedures were specifically nominated. Educological evaluation of any kind was not, in fact, the impartial instrument of measurement that it was often supposed to be. Quantitative assessment in education, typical of a behavioural approach to lesson planning, reflected the interest in technical production. It was (and is) part of the social processes within a society which is controlled by norms and values such as competitiveness, status and privilege (Apple, 1974:6). Apple even characterized the apparently humanistic trend in education towards assessing so-called affective educational objectives as a tightening, rather than a freeing up, of control (1974:6-7). With this, students not only had to perform, but to display the right (meaning socially sanctioned) attitude as well. Given the nature of schools, the right attitude would invariably be the one which assisted smooth running and efficiency, to the neglect of critical appraisal.

Critical Theory and Evaluation

Jurgen Habermas' "critical theory" offered clear guidelines concerning those parameters which should govern educological evaluation. He derived his guidelines from his concept of human interest in *emancipation*. Emancipation, in his view, offered the key to genuinely worthwhile knowledge (Habermas, 1972:198). Through emancipation we are led to critical self-reflection. Emancipation frees us to make the future present through praxis, or *action with a view to change*. Critical self-reflection enables us to place in perspective those other human interests, such as technicality and practical effectiveness, which tend to retard growth through tying us to the past. Habermas describes self-reflection in these terms: ". . . the mind can always reflect back upon the interest structure . . . this is . . . self-reflection" (1972:313-314).

Implications for Curriculum Theory

Max Van Manen has elaborated on the implications of Habermas' scheme for curriculum theory. He centres Habermas' conception of interest in the notion of "the practical"

(1977:205-228). Each human interest leads to a different level of reflection concerning desirable *practical* outcomes of curriculum proposals. The interest in empirical theories leads one to regard the practical as being those outcomes which offer greater technical application. The principles which guide curriculum development derived from empirical educological theories are basically expedient ones. This technical level of reflection will inevitably lead to a similarly technical approach to evaluation (1977:226).

When the human interest in a curriculum proposal is in establishing processes for communication and common understanding, the practical outcomes will be regarded as those which help to analyze and clarify the phenomena of experience, meanings, prejudices, presuppostions and so on. Van Manen suggests that this level of reflection is also restricted. It is sensitive to the *nature* and *quality* of education, but not necessarily to its *worth* and *value* (1977:226).

At the highest level, the human interest is in emancipation. This leads to practical outcomes being conceived as those which lead to an ongoing reflective critique of institutions and authority, including educational authority. At this level, one will criticize the *information* and *interpretations* derived from a particular proposal *and* the *structural paraphernalia* which support the proposal.

> The norm is a distortion-free model of a communication situation that specifies social roles and social structures of a living together in unforced communication. That is, there exists . . . no inequality among the participants of the educational process. [1977:227]

For Van Manen, only at this point does education become a human and ethical enterprise (1977:227).

In like manner, Apple has pointed out the danger in any educological evaluation mode which is only concerned with such criteria as efficiency or intelligibility. For him, proper evaluation connotes valuing, a process which implies *choice* when confronted with various value systems. Apple stresses that the guiding principles of evaluation -- *success* and *failure* -- are social constructs. Educational failure is a construct which results from imposing criteria of measurement to which a student's performance does not accede (1974:12-13). Proper educological evaluation must then include critical scrutiny of those assumptions which underlie the device for measurement, as well as assessment of performance and the appropriateness of the educational program (1974:12). It would seem to be imperative that students be involved in this evaluation, lest the only educological evaluators be those who hold the very assumptions which are designed to exclude, rather than include, some students from success.

Pertinent to the assumptions underlying educological evaluation is Apple's contention that people in modern societies tend to apply engineering-type strategies to their problem-solving (1974:21-22). This "purposive-rational action" tends to stifle ethical concerns or to communicate them in a technical way which purports to be more real, in the sense of being verifiable, and therefore, solveable. The cognitive interest which dominates this kind of reflection is one which is concerned with control and certainty (1974:22). The physical sciences formulate laws which are supposed to govern the regularity of nature. The so-called human sciences, too, have created laws which, similarly, are supposed to map predictable patterns in human action and inter-relationships.

According to Apple, the quest to eliminate the ambiguities implicit in human interaction effectively depersonalizes it (1974:22). By this account, the interest in control is likely to tend towards human alienation and to a smothering of critical dialogue. In this light, educational structures in general, and evaluation procedures within the educational process in particular, could be interpreted as being manipulative towards a de-powering of individuals, rather than helpful in preparing people to become effective participants in democracy.

Apple suggests strongly that traditional educological evaluation modes have "dissolved the elements of argumentation and conflict that enable substantive educational change to evolve" (1974:22).

Such an educological evaluation is locked into the same system from which it arises. As such, it is able to assess a student's performance only in relation to the ideological goals of that very system. It is, however, unable to stand outside in order to evaluate critically the educational system itself. So, while it is presented as an impartial, objective and values-neutral mode, it is in fact anything but this. It is a device by which a particular ideology, epistemology or philosophy of schooling and curriculum is justified and preserved. It is, in other words, a powerful way in which a ruling class can retain its power over the educational process and in which democratic growth can be retarded.

The Ethical Dimension of Educological Evaluation

The issue of how to conduct educological evaluation is therefore an ethical one, just as much as it is a technical one. Within a democracy, any proposal purporting to be educational must surely be justified in terms of its freedom and justice-promoting worth. It must be working for the freedom of the individual and for the reconstruction of the community towards greater justice and humanness. In order to achieve this, any educological evaluation mode must include students in the critical process of educological evaluation, which goes to the very heart of learning.

Action Research Theory and Educological Evaluation

In response to the belief that few modern curricular models, including many of those prominent in situation-based curricula, were promoting or even allowing appropriate and fair evaluation criteria, more radical models have been developed by contemporary situation-based curriculum protagonists. One very prominent set of such models is that one which continues to be developed around the parameters offered by *action research theory*.

The thrust of action research is to encourage participants to improve the process of teaching, guided studying and learning, not by appeals to higher authority's policy-making procedures, but by on-the-spot, day-to-day problem solving and management. This involves skills in educological research and educological evaluation (including educological evaluation of self) and in disseminating one's own educological research results by means of practical application. Stephen Kemmis summarizes action research as a model which "creates a forum for group self-reflection which transforms communities of self-interest into learning communities" (1980:1).

Essential to the process of action research, then, is the control by those involved in the curriculum proposal at hand, primarily the teachers and, presumably, parents and students too. Outsiders can facilitate, but should not dictate. John Elliott insists that any outside facilitator must be able to justify her or his research through dialogue with the participants in the curriculum proposal (1978:356). Shirley Grundy and Kemmis insist that it should involve the fullest possible involvement on the part of all participants: it should be, in the truest sense, a *democratic* process (1981a:4). This is vital to ensuring that any deliberations and plans for action have a practical and immediate application (1981b:8).

True to Habermas' vision, the comprehensive nature of the evaluation dimension within action research is seen in the stress on its constant, reflective nature (Grundy and Kemmis, 1981b:8). Elliott refers to the spiral of review, diagnosis, planning, implementing and monitoring (1981:11). This is central to the critical nature of the model. Action research is about improving curriculum conditions through critical reflection and dialogue.

Again, true to the Habermas' vision, the human interest involved in action research is the interest in the emancipation of all who are involved in the process of action research. Emancipation towards democratic participation can only be ensured if the effects can be seen in a transformation of those structures by which *groups* (as against individuals) work towards change. Habermas insisted that true critical reflection is distinguished by the fact that it immediately takes a practical organizational form (1974:35). For Grundy and Kemmis, this genuinely critical perspective implies the necessity of total collaboration by all involved in, and affected by, the proposal at hand (1981a:4).

Similarly, Grundy and Kemmis propose that Habermas' critical theory, and what they choose to call "emancipatory action research," are similar in that they both involve "the linking of theory and practice through the organization of enlightenment in critical communities" (1981a:23).

It is this enlightenment which will transform the self-interested community into the community of learning, by breaking down those divisions which tend to suffocate individuals and destroy democracy. By establishing a "fellow researcher's relationship," teachers and students are drawn into a constant reflective (and self-reflective) mentality, responsible for their own studying, their own learning and their own world.

Six Stages of Action Research

Grundy and Kemmis' model of action research is a practical attempt to turn Habermas' critical theory into practice. Its six stages are (1) *interaction*, (2) *critical intent*, (3) *group deliberation*, (4) *enlightenment*, (5) *enlightened deliberation* and (6) *praxis* (1981a:26-33).

The interaction stage is a trial period, a time when the would-be initiator of an educational proposal might try out her or his ideas on other teachers, on a select group of parents and on students. If there is sufficient agreement and signs of support, the process will move to the critical intent stage, in which everything in the present structure will be subjected to close scrutiny. By the end of this stage, there must be a strong commitment from a majority of participants to work for change.

At the group deliberation stage, a thorough analysis of the total situation should ensue. Both external and internal factors will be assessed thoroughly in order to judge the viability and advisability of change. The result of this deliberation should lead to the stage of enlightenment, in which everything is seen in a new way and in which there is an acute awareness of those assumptions and organizational details which direct, and sometimes smother, our teaching, guided studying and learning. If the original hunch about the need for change was correct, then one should be able to criticize present practice with clarity by now.

The stage of enlightened deliberation is one in which all the information that has been gained so far is used, from the new enlightened vantage point, to set up the parameters of any new proposal which is deemed appropriate. The stage of praxis is then a matter of implementing the educational proposal, choosing subject matter, methods *and* evaluation criteria.

Praxis to Praxis

The contribution of action research to the evaluation debate is seen, then, in the constant, reflective and spiral nature of this part of the process. "Praxis-to-praxis" is an eloquent phrase by which to describe this comprehensive type of educological evaluation of *all* processes within education by *all* participants within education. The critiques which are produced by such a process can come to form the basis of a genuine critical theory (Grundy and Kemmis, 1981a:34), with the distinct advantage of being grounded in, and having arisen from, practical experience. This is close to Van Manen's concern for linking levels of reflection with ways of being practical. At the deepest level, a critical reflection becomes eminently practical (1977:226-227).

In fact, action research theory begins and ends with practical concerns. The dialogue and equality of communication which provides the necessary modus operandi for action research must centre on a "substantive problem" which is undergoing the process of enlightened deliberation (Grundy and Kemmis, 1981a:35). To be genuinely emancipatory, the process must involve group deliberation on the chosen educational problem and lead to total collaboration and participation by *all* involved.

The Promise of Action Research

According to the theory, at least, it would appear that action research might involve one of the best sets of parameters available among contemporary curriculum models for establishing and maintaining the type of educological evaluation procedure which should contribute to the growth of a democratic participatory mentality through curriculum involvement. If so much is to be placed on the shoulders of action research, however, it is imperative that its parameters and processes, themselves, be the focus of constant critical evaluation.

In this spirit, it should be noted that there has been some recent concern expressed about the truly critical nature of action research. Rex Gibson is sceptical that, for all its apparent zeal, action research in fact has any power in the face of structural inequality and injustice (1985: 59). Moreover, he claims that it can be intensely uncritical of itself, its own assumptions and its own community and, as such, is more likely to result in an increased conformity and intolerance of deviance (1985:60).

In response, Kemmis admits that action research, in practice, has often been far from perfect (1986:50). Certainly, he concedes that action researchers must constantly be returning to first principles and examining the bases of their assumptions. Granted that, however, he contends that the model holds great promise for education to be changed from within (1986:50).

As evidence of the commitment on the part of action researchers to reflect on their own assumptions and criticize their own praxis, a seminar was held at Deakin University (Geelong, Victoria, Australia) in 1986 to serve these very ends (McTaggart and Singh, 1986:42-46). In an effort to ensure its genuine critical and emancipatory thrust, the seminar concluded with the proclamation that

> the only research deserving the name action research is that which contributes to the struggle to identify groups committed to social action and educational reform, and in particular, to *equality of access and legitimate participation in education* [my emphasis]. It will aim to be emancipatory, or it will not be called Action Research at all [McTaggart and Singh, 1986:46]

This commitment to access, participation and emancipation is central to the proposition that curriculum involvement, generally, and participation in educological evaluation, specifically, can be powerful determinants in the development of the range of knowing and the types of attitudes necessary for becoming a mature contributor to a democratic society.

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Education for a New Era: A Philosophical Educology

Doug Ogilvie
University of Queensland
St. Lucia, Queensland, Australia

ABSTRACT

Education, or self-discovery, is the chief natural purpose of the family, the school and the society. The crucial need today in these educational systems is for the development of creative imagination and self-responsible decision-making, on the part of all involved.

The School of Life

Human existence is arguably, meant to be an educational experience. It makes sense if it is a curriculum, or set of learning experiences, the understanding of which can lead us to increasingly higher degrees of competence in our perceptual, intellectual, conceptual, motivational and expressive processes. Otherwise it is all rather senseless, whether viewed as a brief hedonistic, pleasure, or a temporary bourgeois market place, or a chance interaction of physical elements.

However, most of us, once we reach the age of reason, refuse to be educated (i.e. to be led forth, to develop from a condition of latent, rudimentary or merely potential existence) and we devote ourselves instead to the alternative, i.e. we "produce." We are like grubs who refuse to believe in the possibility of butterflies. Rather than developmental labour, we engage in productive work. Rather than seeking liberation within mature communal behaviour, we perpetuate the immaturity of authority, dominance-submission and factionalism.

Instead of a natural, mature educative society, we perpetuate an artificial, immature productive and reproductive one.

The Nature of Personal Development

Many writers have hypothesized on the nature of natural human development, and useful models are provided by the hierarchical needs of Maslow (1954) and the developmental trends of Argyris (1960).

The key natural movement would seem to be from a state of complete dependence and submissioon as an embryo to a state of maturity characterized by complete independence from human authority and complete rejection of roles involving either dominance or submission. This movement is associated with an increased desire and ability on the part of the person to imagine alternative scenarios, to make her or his own decisions between competing choices, to act sensibly in accordance with those decisions and to accept the consequences of those actions.

Jesus of Nazareth, Francis of Assisi and Mahatma Gandhi might illustrate maturity of this order.

The main characteristics of such mature (self-actualizing) people appear to be:

(1) self responsibility, in the sense of accepting responsibility for making and implementing one's own decisions and rejecting the authority of other human beings,

(2) equalitarian collaboration, in the sense of labouring with colleagues for personal and communal development through consensual decision-making,

(3) commitment to an ideal (i.e. an unprovable assumption) which is more important than one's personal needs for survival, reproduction, belongingness or recognition

Self-responsibility is associated with authentic personal behaviour in place of the socialized role-playing that characterizes immature people. Collaboration ensures that this occurs without impinging on the mature rights of other people. Idealism ensures that the primacy of the person over the collectivity does not deteriorate into narcissism and selfishness but has a moral purpose.

Production vs. Education

No significant improvement in society can be expected to emerge from institutions controlled by people who have a vested interest in maintaining the protestant view of humankind as producers. These commercial organizations, devoted primarily to extraction, manufacture, distribution, finance and socialization, and their associated trade unions and chambers of commerce, have long been instrumental in inhibiting humankind's natural development. In this, they have been symbiotically allied with institutions controlled by people with a commitment to maintaining catholic-style authority systems, whether in churches, academies, professions or political parties. The commercialism of the first group of organizations is harmful to both personal and societal development because of the emphasis placed on our immature deficiency needs for acquisition, consumption and belongingness. The dominance-submission of the second group is equally harmful because it inhibits our natural growth drive for self-actualization.

The further development of humankind is dependent on members of educational organizations being prepared to assert the primacy of the human drive for self-actualization, both in the living model they present to others and in the theoretical argument with which they justify their practice. This involves a rejection of both the protestant work-ethic and the catholic institutionalization of authority and a search for genuine educational alternatives.

The basic organization for human education is the family, and it is here that we can all be educators. The secondary educational organization is the institution, and here school teachers have a special responsibility. The tertiary educational organization is the community, and here again we can all practise education. An alternative to our present commercial-production society will only emerge when enough ordinary people become committed to their own continuing education and to the education of their children and their colleagues within families, institutions and communities.

Such a commitment to the release of mature human potential inevitably calls for a rejection of the role-playing whereby most of us maintain the present authoritarian hegemony, and a rejection of the induction programs whereby our families, institutions and societies socialize us into accepting those roles. It requires, instead, that we embrace education as the process whereby we manifest the characteristics of human maturity that are embedded, latently, within us.

In this view, the socialization programs of humankind's past five thousand years (and our individual lives to date) have generated necessary adolescent taboos. These can only be identified and broken by self-actualizing people, but must be broken by them if they are to attain genuine human adulthood.

Experiences

If it is accepted that the over-riding aim of education is self-actualization, or of "self discovery" in Roszak's terms (1979), then its essential characteristics are:

(1) a structured range of experiences from which abilities can be learned,
(2) graded practice in self-responsible decision making, and
(3) the encouragement of creative imagination

Currently, most children are deprived physically, intellectually, emotionally, mentally, morally and socially. It is not simply a case of one class or faction being privileged and another being underprivileged; rather, each social group tends to specialize in its own inadequacies and inhibitions. Whereas the intellectual development of working class children is inadequately catered for in their urban ghettoes and state systems, the social development of the children of the managerial-professional caste is inadequately served in their bourgeois homes and private school systems.

It is largely because of our technological expertise and our consumerism that personal development is widely inhibited throughout the class structure. We allow ourselves to be indoctrinated to value consumption rather than self-discovery, and we are committed to using technology to replace natural human capacity. We improve our machinery in preference to improving ourselves; we produce and consume more and more in preference to becoming more and more as human beings.

Physical development requires exposure to a variety of physical experiences from horse riding to swimming, from yoga breathing to athletics, and results in natural physical fitness. In our underdevelopment however we are characterized today by our pot bellies and round shoulders and artificality of all sorts.

We have allowed our socializing institutions to mould us into becoming paying spectators and paying consumers and little else.

Intellectual development requires open access to facilities and techniques for reading, calculating, reporting and recording and results in competence in rational reason and its expression. Yet today's political, economic and legal systems must be as irrational as any in humankind's history.

Emotional development occurs through exposure to a wide range of feelings, both as subject and object, such as love, hate, anger, forgiveness, greed, selfishness, intimacy and trust. It culminates in competence in intuitive and instinctual thought and expression. However, most of us today are emotional cripples!

Mental development occurs through exposure to a variety of paradigms and theories from a broad range of disciplines and fields of study and application. It permits us to understand our experiences at increasingly more meaningful levels and so behave in ways more appropriate to mature human beings, i.e. morally. Yet how many of us have been socialized to lead meaningless, purposeless, immoral lives.

Social development requires experience of a wide range of interpersonal situations: authoritarian, factional, anarchistic, competitive and cooperative. It results in interpersonal competence. Yet, following our schooling, most of us accept our immature authoritarian and factional relationships as part of inevitable "human nature."

The utter failure of our family systems, school systems and social systems to provide the range of structural experiences needed for personal development (or, alternatively, our failure to utilize these experiences) is obvious for anybody with eyes to see.

Personal Choice

Similarly, these systems have inhibited our natural drive to become responsible for our own lives rather than obey the authority of professionals and managers.

Whereas it is natural for the infant to be dominated by parental authority in a period which is, after all, merely the final embryonic stage, it is quite unnatural for adults to be similarly dominated, whether by Big Brothers or silent majorities or intangible hegemonies. Yet a major characteristic of human society today is its authoritarianism. We behave as others expect us to behave rather than as we have decided, self-responsibly, we should behave. We are controlled by our thoughts that "*They* will not let us -- *They* will not like it -- *They* will disapprove" (Roszak, 1979:123).

Our educational systems need to develop within us an awareness of the choices that continually confront us, a desire to make our own decisions and a realizaiton that all such decisions have consequences that must be lived with. It is because we do not accept that self-discovery is the purpose of life that we fail in this area. If life is for work, for jobs, for profit, for status, for the state -- then adults can make choices for children and superior adults can make decisions for inferior adults and families, schools and societies can legitimately be authoritarian.

However, if life is for self-actualization, then the preparation needs to begin in infancy and continue until either realization or death. In this case, the teacher helps the student (or the learner) to explore the possibilities in any situation and realizes that the specific situation is largely irrelevant because it is the process of choosing that is the focal issue. Preparation for self-discovery entails a continual, graded exercise in decision-making, both individually and in groups, with teachers as resource persons who are caring and concerned and competent in the process themselves and so model, in their own behaviours, the self-responsibility that they are committed to developing in their proteges.

One tragedy of modern family systems, school systems and societal systems is the infantile model presented to children by parents, school masters and politicians who are either dominants or submissives and, what is worse, satisfied to remain so.

Creativity

If it is accepted that few, if any, people have matured to self-realization, then it follows that our present paradigms and theories are inadequate for understanding the nature of life. What is needed is a fresh insight into the nature of humankind. The tired old men and women of tired old religious, economic, political and scientific paradigms need to step aside and stop socializing the young into their inadequate, immature realities.

This does not mean that children should not be brought into close contact with the great minds of past and present, but merely that this should be associated with a spirit of questioning and not one of acceptance. Children should be taught to question the experts rather than to accept the authorities.

In particular they need to be encouraged in creative imagination -- the ability to visualize an assumption, or proposition, that differs from normal and to explore the theories and the practices that are implicit in such an assumption. Yet our present "educational" systems inhibit this through their emphasis on obedience (father knows best!), content curricula (curriculum specialists know what should be learnt), assessment (teacher knows what is right!), subject disciplines (academic rules must be followed!) and management (the principal is paid to make the decisions!).

How many children in today's factual world (or adults for that matter) understand the nature of a parable? How many have developed their imagination on puzzles, riddles, koans and fairy stories? Today, our visual aids such as television and our structured toys and games cripple their capacity to imagine, dream, improvise, conjecture and experiment. In our material affluence we give them the unimaginative "real" thing rather than the challenge of the flexible dream. Cobs of corn, and clothes pegs no longer suffice for toys, and games must now be purchased from a merchant and must be "correct" (like a school test answer) in every petty, technological detail.

It is true that creative imagination cannot always be completely stifled, and so it is often emasculated into harmless impotency within the titillation known commonly as "culture" -- in the arts and crafts, in literature, drama, painting, dance and music. Beneath all of its pomposity and pretentiousness, "culture" merely serves to distract its practitioners and its clients from the important art of self-development to the triviality of playing games with words, colours, sounds or movement.

Like scientism, art has become a neurotic expression of the natural desire to understand life and express tha understanding.

Like religion, business and sport, they have both, scientism and art, become opiates for many inadequate, immature people.

This betrayal of creative art can be remedied, but this requires teachers who are prepared to participate themselves in the remedial exercise.

The Answer

There is no attempt made here to offer solutions to the problems of education, because that would make a nonsense of the argument so far presented (and to expect such answers would be indicative of the reader's educational immaturity).

The solutions can only be derived by concerned educators within the context of their own systems. Genuine solutions can not be offered, or imposed, in recipe-book fashion by elite professionals and managers. We have tried this authoritarian approach for ages with singualar lack of success. Of their nature, educational answers can only arise from people committed to education as self-discovery, and they are specific to the situation in which such people find themselves. Certainly many of us, as outsiders, can participate collaboratively in such grass-roots exercises, and bring a variety of viewpoints and expertise to the discussion, but only as collaborators and not as authorities.

However, a few things can be said with some certainty. One is that the education of teachers and students must be a conjoint activity. The old idea that teachers have nothing to learn from their interaction with students needs to be replaced with the realization that all life is a potential learning experience, that it is the process of education that is crucial rather than the situation wherein it occurs, and that most teachers are more inhibited than their students.

Another is that the school is only one educational institution among many, and no mature educological theory can omit consideration of the crucial learning that occurs within families and within society. No longer can school teachers divorce themselves from the educational implications of society's family structures, economic values, political practices, occupational ideologies and religious assumptions. There is an educational whole that needs to be assembled from the fragmented societal institutions that currently divide, socialize and emasculate us.

And related to this is a third point. We can learn as much from nature as from humanity, as much from the past as from the present, as much from our mistakes as from our successes, as much from the example of evil men as from the lives of saints. The lessons of life are everywhere if we only allow ourselves the luxury of living as we were meant to live -- utterly dissatisfied with our present imperfections and driven by an insatiable curiosity that is beyond our control, or the control of others.

Nevertheless, it is as if we are faced by a giant conspiracy designed to make it as difficult as possible for us to discover ourselves. There are countless movements designed to make us satisfied with our present attachments -- patriotism, parochialism, denominationalism, factionalism, consumerism -- all of which hinder our education. There are continual pressures on us to conform happily to the socialized roles designed for us -- sexual, occupational, racial, agial -- all of which hinder our self-actualization. There is a vast propaganda exercise designed by media moguls, politicians and advertising hacks to persuade us that we live in the best of all possible worlds.

It is out of an intense, but optimistic, dissatisfaction with our present organizations and our present societies that we may be motivated to educate ourselves, and others. Nothing of much value can arise from the happily satisfied or the smugly satiated, nor, let us realize, from the bitter violence of our less perceptive colleagues.

Let us tell these things to the children we teach and act as if we really believe the things we say. They can ask no more of us.

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An Educology of Effective Schools: Assuring the Proliferation of Effective Schools Practice

William C. Wolf, Jr.
University of Massachusetts
Amherst, Massachusetts, U.S.A.

ABSTRACT

Outcomes of research about effective schools clearly point out some schools do better than others in teaching basic skills and in developing positive attitudes towards school work. Strategies and tactics for transforming ineffective schools into effective ones are known, and appropriate resources are available. Researchers have been successful in producing an educology of effective schools. But the educology and the relevant resources are not necessarily in forms apt to be uncovered, understood or used by those persons in most need of them. What is wanted is a set of procedures which give school practitioners guidance in how to translate the educology of effective schools into a plan for practical and productive action. One set of procedures which shows promise of providing links between the educology of effective schools and the needs of educators associated with ineffective or marginal schools is the WWLM *(the* Wolf-Welsh Linkage Methodology*) and the* WKD/UI *(the* Wolf Knowledge Diffusion/Utilization Inventory*). The WKD/UI is a survey instrument. It provides data about (a) an organization's capacity to change, (b) the organization's needs and (c) the set of plans appropriate to meet those needs. The WWLM is a guide for action. It is akin to a roadmap for innovation which specifies a starting point for action, alternate routes and a destination (or set of intended outcomes). Both instruments have value for resolution of several key problems related to using the educology of effective schools (i.e.*

knowledge about effective schools) to transform aspirations into effective schools practice.

Introduction

> How many effective schools would you have to see to be persuaded of the educability of all children? If your answer is more than one, then I submit that you have reasons of your own for preferring to believe that basic pupil performance derives from family background instead of school response to family background. Whether or not we will ever effectively teach the children of the poor is probably far more a matter of politics than of social science and that is as it should be.
>
> We can, whenever and wherever we choose, successfully teach all children whose schooling is of interest to us. We already know more than we need to do that. Whether or not we do it must finally depend on how we feel about the fact that we haven't so far.
> [Ron Edmonds] [1]

Ron Edmonds was one of an ambitious group of researchers which focused its energy upon the identification of school factors that seemed to be related to improved pupil performance during the 1970's and 1980's. He along with scholars like Bloom, Brookover, Clark, Frederickson, Rutter and Stallings helped frame what has come to be known as the "effective schools" movement. These researchers studied and observed school operations, gathered varied data pertaining to the operations, subjected data obtained to intensive scrutiny and reflected upon outcomes. Their reflections resulted in modifications in school practice which have had the most positive consequences for the education of poor and minority group pupils.

The effective schools movement originated in schools located in large cities across the U.S.A. Serious and urgent needs were identified in these environments, and vigorous, aggressive and cogent action was undertaken to address those needs. Educators responsible for making the targeted schools more effective received recognition, declarations of appreciation and often promotion for their initiatives. Oft times, these educators were called upon to offer advice and to guide similar interventions in other communities. Some met the challenge successfully again and again; others encountered unanticipated difficulty in meeting the challenge in unfamiliar school environments. Many of these educators learned that enthusiasm and prior success were not sufficient to extend effective schools practice in all communities and school districts.

It is one thing to change a familiar school environment from ineffective or marginal to effective; quite another to replicate the process in an unfamiliar school environment. Educators involved with or anxious to move in directions suggested by the educology of effective schools either have learned about or soon will learn about a constellation of factors which retard and/or thwart constructive action.

The Concept of Effective Schools

According to Appalachia Educational Laboratory staff (1986), an effective school is one in which:

1. Basic skills achievement cannot be predicted from students socio economic status
2. Student attendance is regularly above 90%
3. Documented occurrences of vandalism and delinquency are relatively low.
4. High satisfaction ratings are given the school by all stakeholders (school personnel, students, parents and community)

Elementary schools and middle schools reflect these attributes much more frequently than junior and senior high schools. It is not difficult to determine the extent to which a specific school has each of the above-mentioned attributes.

In the past, it has been quite a research challenge to relate desirable performance and causal school practices meaningfully. However researchers now are able to talk about specific sets of variables which yield insight into cause-effect relationships. For example, Mackenzie (1983:8) has identified 31 dimensions of effective schools from his analyses of the related research literature. He has clustered these dimensions into three categories (leadership, efficacy and efficiency) and has described core elements and facilitating elements within each category. Summarizing research of the type conducted by Mackenzie enabled Rowan, Bowert and Dwyer (1983:24) to isolate four school-level characteristics which promote improved pupil performance in the basic skills:

1. A school climate conducive to learning — one that is free from disciplinary problems and that embodies high expectations for student achievement;

2 A schoolwide emphasis on basic skills.
3 A system of clear instructional objectives for monitoring and assessing students performances.
4 A school principal who is a strong programmatic leader and who sets high standards, frequently observes classrooms and creates incentives for learning

A number of recent related research reports provide support for the relevance of characteristics like those mentioned above.

Appalachia Educational Laboratory staff have translated such educological research outcomes into a staff development program intended to be used within local school districts (AEL, 1986:3-9). The program addresses 11 characteristics of effective schools, *viz.*:

1 Needs basis
2 Use of assessment
3 Objectives
4 Instructional time and task orientation
5 Expectations
6 Conditions and resources
7 Code of behaviour
8 Rewards and reinforcements
9 Roles and responsiblities
10 Parental support and involvement
11 School climate

These variables were chosen by laboratory staff because they are alterable -- that is, each can be addressed constructively within a given school and/or district.

These examples of effective schools are most encouraging. Unfortunately, conceptual and methodological limitations apparent within research studies drawn upon suggest that relationships between school-level characteristics and pupil performance may be somewhat unstable. Even so, outcomes of effective schools research clearly point out some schools do better than others in teaching basic skills and in developing positive attitudes toward school work.

Obstacles Along the Path Toward Effective Schools Practice

Effective schools practice entails so many specifics that it is difficult to address all of them. For example, how do interested persons ascertain their own level of need with regard to effective schools practice? How do interested persons plan and sustain in service training initiatives related to all of the important effective schools components? How do interested persons obtain necessary resources to modify in meaningful ways questionable school practices which are already in place? How do interested persons clear appropriate amounts of their time to oversee the matters addressed in the first three questions?

From these four questions, an impartial observer could reasonably conclude that the effective schools practice cannot become an integral part of a school district without major commitment and the expenditure of immense energy.

Everett Rogers (1983: Chapter 6) offers an interesting perspective to support conclusions which might be drawn by an impartial observer. Rogers isolated five kinds of individual perceptions of the attributes of an innovation which affect the rate of adoption of an innovation. They are:

1. Relative advantage: The innovation is perceived as being better than current arrangements or practices.
2. Compatibility: The innovation is perceived as consistent with values, past experiences and needs of targeted setting.
3. Complexity: The relative degree of complexity of the innovation is perceived as relatively difficult to use.
4. Trialability: The innovation can be experimented with on a limited basis.
5. Observability: The results of the innovation are visible to others.

When the concept of effective schools practice is examined in light of these five attributes, potential problem areas quickly come into focus.

Needy school environments will not be *compatible* with effective schools practice, hence, considerable dissonance between proposed practices and current practices will always be a given condition. Challenge number one is to ameliorate the dissonance. The *complexity* of the process of effective schools practice will discourage all but the most stalwart educators. Challenge number two is to portray effective schools practice as an attainable goal. Since the process of developing effective schools practice can be arranged into manageable subcategories or stages, it is possible to conduct limited and relevant experiments. *Trialability* then can be viewed as an asset with effective schools practice. Challenge number three is to compartmentalize the process appropriately. Neither *relative advantage* nor *observability* comes into play until many features of effective schools practice have been adopted. This situation suggests a chicken-egg dilemma.

Challenges number four and five are to resolve the dilemma by conceptualizing plans intended to draw upon the experiences and practices of other involved educators.

Each of the five challenges has been or will be accepted by educators who aspire to become a part of the effective schools movement. Educators have in the past opted to accept and attend to each challenge personally; they have commissioned one or more consultants to share the responsibility; they have drawn upon printed resources, in-service training opportunities and consultation services offered by specific organizations (e.g. the Appalachia Regional Laboratory); and so forth. Their enterprise has drawn national attention to progress being made with effective schools work.

Innovative individuals, charismatic individuals, court orders and the threat of court orders seemed to influence the implementation of effective schools research outcomes within many school environments during the past half decade. There is now in operation a set of schools across the U.S.A. which represents what is possible to achieve from the work of dedicated, enthusiastic individuals and favourable circumstances. These schools serve as "lighthouses" to all educators.

It is unfortunate that there are many, many more schools across the nation which remain untouched by the progress. These are schools which do not meet the needs of poor and minority group pupils either consistently or satisfactorily, and which are not taking aggressive steps to address the problem. Satisfaction with current levels of practice, limited resource potential required to initiate changes and/or a history of unimpressive change initiatives, probably account for their current levels of practice. When members of this school group are targeted for effective schools work, trench warfare type strategies will be required, as assets like innovators, charisma and court orders are going to be in short supply.

A set of fortuitous circumstances, supported with credible research-based evidence, may account for a fair amount of the effective schools progress realized thus far. However it may not be sufficient to influence practices significantly within large numbers of schools which remain untouched by effective schools research outcomes. Problems related to the overwhelming nature of effective schools practice and to the apathy and limited resources likely to be enocuntered within many needy schools are significant. Imaginative people have used most diverse available resources in the past to link effective schools research outcomes and needs of educators who work with poor and minority group pupils. Whereas the breadth and quality of such resources have improved during the 1980's, the challenge of modifying practices within the next set of schools is imposing.

Improving Practices Within Ineffective or Marginal Schools

It is obvious that effective schools research outcomes are not adopted or adapted without much fuss. Even within the most receptive of school environments (i.e. those under court order to change), the implementation process transpired over a period of years, and performance improvements were measured in feet and yards rather than miles. However, the bottom line ultimately was improvement, and the success stories have raised the aspirations of educators across the U.S.A. What is not clear in the evolving relevant literature about effective schools is advice pertaining to the "how" dimension related to improving practices within ineffective or marginal schools. That is, how should persons, who are willing to accept the school improvement challenge, proceed to change ineffective or marginal schools practice to effective schools practice? Are strategies and tactics which are of proven value available to guide decision-making throughout the change process? And are resources available to support such change initiatives? "Yes," with a qualification, appears to be an appropriate response to the last two questions. The qualification is quite significant, however. Strategies and tactics are known, and appropriate resources are available, but not necessarily in forms apt to be uncovered, understood or used by persons in most need of them. Time is required to track down, assemble and apply appropriate resources in order to make things happen. Those persons who are in a position to accept the school improvement challenge often are not willing or able to commit much time to the search and assembly work which are of crucial importance to the improvement process. Many rely upon their instincts as professional educators and move ahead. "Damn the torpedoes; full speed ahead!" characterizes their behaviour. Swashbucklers survive in motion pictures; they are often slain in institutional change arenas.

An alternative has been evolving for the past decade, and it is of importance to swashbucklers and the more cautious and prudent minded. Researchers at the University of Massachusetts, Amherst (Wolf, 1984) initiated the alternative as a result of their study of variables related to the diffusion and utilization of knowledge. They followed in the footsteps of Rogers, Havelock and many others, in order to come up with a parsimonious set of guidelines which reflected work completed across disciplines. Table 1 depicts a communication configuration which these researchers believed juxtaposed salient variable classes meaningfully.

Table 1

Perceived Relationships of Classes of Variables
Believed to be of Importance to the Communication Process

Classes of Antecedent Variables	**Classes of Manipulable Variables**	**Classes of OutcomeVariables**
Conditions for change	Characteristics of communication or diffusion strategy	Characteristics of adoption or utilization decisions
Characteristics of innovator or linker		Characteristics of rejection decisions
Characteristics of innovation		
Characteristics of adopting units		Chracteristics of deferred action decisions

The configuration described in Table 1 served as a point of departure for a series of diffusion/utilization studies. These studies were focused upon how to link the world of educological researchers and knowledge production with the needs of educators and knowledge users. Research made clear (a) a specific set of variables and processes to be addressed, (b) a *modus operandi* (a metamethodology) for addressing the variables and processes and (c) a set of procedures as to how to apply outcomes of the enterprise.

These inquiries contributed to the development of two instruments which were designed to meet the needs of those persons aspiring to link knowledge production and needs of knowledge users. The first instrument is a linkage methodology, intended to guide persons' actions. The second instrument is a survey inventory, designed to generate data needed by persons during the planning and implementation stages of a linkage undertaking. Both instruments have been tested in a variety of settings, and both instruments have been revised six times as a consequence of information obtained.

The Wolf-Welsh Linkage Methodology (WWLM) has been designed to address erratic and unpredictable knowledge diffusion and knowledge utilization practices which are characteristic of many organizations in the U.S.A. The methodology is an applied outcome of years of research aimed at the identification of classes of antecedent, manipulable and outcome variables believed to be of importance to the process of linking knowledge production and needs of knowledge users. The resource that has evolved is akin to a road map which specifies a starting point, alternate routes and a destination. It adds order and direction to the linkage process within environments not accustomed to either order or direction.

The WWLM consists of 7 distinct but interrelated parts. Each part is made up of two components. The first is a brief orientation statement intended to clarify the nature of information sought. The second is a set of recommendations aimed at acquiring needed information. Whereas the 7 parts are presented sequentially, their inter-related nature calls for application of specific parts in conjunction with opportunities presented. The 7 parts are:

1. Qualifying for Linkage Responsibility

2 Targeting an Audience for a Change Initiative
3 Defining Knowledge to be Adapted or Adopted
4 Modifying Knowledge Selected to Accommodate Identified Needs of a Targeted Audience
5 Obtaining Commitments from Key Persons to Initiate and Sustain a Change Initiative
6 Ascertaining the Impact of Selected Knowledge Upon a Targeted Audience

These parts prescribe a relevant frame of reference within which individual ingenuity is encouraged and is able to flourish.

What accrues to persons who choose to incorporate the WWLM as part of their linkage repertorie? First, they quickly get the "big picture' and the "little pictures" related to a change initiative. Second, they are told what to do in order to make fruitful innovations happen within an environment earmarked for change. Third, they become the recipients of systematic feedback pertaining to the viability of specific plans made and specific action taken. And fourth, the methodology facilitates the production of physical traces during a change initiative which can be studied to determine pluses and minuses of the effort.

The Wolf Knowledge Diffusion/Utilization Inventory (WKD/UI) has been designed for use by those persons who assume responsibility for varied kinds of organizational change initiatives. It is intended to be employed along with the Wolf-Welsh Linkage Methodology. The Inventory provides persons making use of the Methodology with important data. These data can be converted to numerical scores, which put into perspective relationships among (a) an organization's capacity to change, (b) an identification of organizational needs and (c) a conception of plans to meet the needs.

The Inventory consists of five separate sections, each of which includes four items. Up to four points can be earned for each item; hence, the range of scores possible is zero to 80. Scores obtained can be used to judge the viability of four different types of organizational change initiatives, *viz.*, awareness-interest, analysis-reaction, pilot test and adoption-adaption.

Part One highlights characteristics and commitments of the set of persons responsible for the linkage. *Part Two* focuses on conditions for change within targeted environments. *Part Three* emphasizes characteristics of the set of innovations to be adapted or adopted. *Part Four* places emphasis upon characteristics of environments targeted for change. And *Part Five* focuses upon characteristics of selected communication strategies and tactics.

What accrues to persons who choose to incorporate the WKD/UI as part of their linkage repertoire? Data obtained can be used to reduce guesswork associated with organizational change; data can be used to address problems that arise; and data can be used to alter plans conceived prior to the commitment of resources. These persons have an additional advantage of objectively derived documentation to support some or many of their linkage decisions.

Educators willing to accept the school improvement challenge ought to welcome the additon of the WWLM and the WKD/UI to their repertoire. Both tools can be utilized easily; both are appropriate for work envisioned within the effective schools practice sphere; and both are available at low cost (i.e. reproduction and mailing expenses). Application of these resources should improve practices within many ineffective and marginal schools.

Footnotes

[1] Edmonds quotation was offered during staff development work associated with Project SHAL, a St. Louis, Missouri School Department enterprise.

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An Educology of Testing: American Student Attitudes about Test Formats, with Special Reference to the MDT Multi-Digit Testing Technique

Paul S. Anderson
Illinois State University
Normal, Illinois, U.S.A

ABSTRACT

Seven formats of educational testing are compared according to student preferences and student perceptions of how well each test method evaluates learning. The seven formats are (1) true/false, (2) multiple-choice, (3) matching, (4) MDT multi-Ddgit testing, (5) fill-in-the-blank, (6) short answers and (7) essay. The sparse relevant prior research is reviewed. A survey of 1,440 university students reveals that students perceive a hierarchy in the formats of educational testing. The above list ranks them in increasing complexity of responses, increasing student perception of ability to evaluate learning and decreasing student preference. MDT multi-digit testing is a machine-scored equivalent to fill-in-the-blank tests. It utilizes numerically labelled and alphabetized long lists of up to 1,000 discrete responses. The newly devised MDT multi-digit gtst is not as favourably received by students as are more familiar methods. Students consider themselves to be less able as test takers with the MDT method. Students indicate no familiarity with it from high school and comparatively little from university courses. Thirty-five percent stated that the MDT method was not appropriate as used in their course. When the sample was controlled for "appropriate use," however, the MDT was as well liked as and was rated as equal in evaluative power to the fill-in-the-blank method of testing. The incorporation of the more rigourous MDT method of assessment *into the upper realms of machine-scored testing should benefit education in terms of increased learning and savings of time and cost.*

Introduction

The advent of a new and distinctive test format for machine-scoring of fill-in-the-blank questions gives rise to numerous avenues of research. Research concerning student attitudes toward this new format (called MDT multi-digit testing) also raises questions about attitudes toward the full range of testing methods. A review of the prior academic research on student attitudes about traditional testing methods is presented. Then the results of a survey of 1,440 American university students show how well the MDT testing method fits into a hierarchy of seven test formats, ranging from true/false to essay.

Educational Measurement, Testing and Educology

Measurement of student learning is a multi-faceted cornerstone of education. Educational measurement can be performed in a variety of ways that include laboratory exercises, tutorial discourse, in-class observations and term papers. Each of these methods is valid for specific purposes, but the core of educational measurement is commonly called testing. Testing, as defined here, involves the recording (usually on paper) of student responses to a written set of questions within a prescribed time period, usually without access to books or notes, and for a specified point value toward a grade in a course of study.

Testing is an extremely common occurrence with which most students become highly familiar in terms of question formats and methods of administration. Testing can vary greatly from school to school and from subject to subject. The variations can be in frequency, length and format. In general, given years of prior experience, most students develop some sense of "test-wiseness." Students become familiar with the administrative methods and the question formats of testing in much the same ways as do their teachers, that is, mainly by trial and error.

All students and teachers form opinions (i.e. attitudes) and perceptions about test formats. Common sense generalizations are drawn from common experiences. For example, it is commonly recognized among teachers and students that essay tests are unpopular, although they evaluate well. Multiple choice questions are popular and are nicknamed "multiple guess" because one of the five answers must be correct. True/false has a reputation for tricky phrasing. Fill-in-the-blank requires recall rather than recognition, but that format is much slower to grade than are the machine-scored objective formats.

The content of the preceding paragraphs is common sense knowledge to most teachers and their students. That common sense knowledge is not education; it is knowledge about education, i.e. educology.[1] That knowledge derives from the students' and teachers' educational experience, and it has entered into the *de facto* body of warranted assertions about education. In other words, much knowledge in use about testing and test formats has entered into the fund of educology through the door of common experience, not through the scientific study of testing. Certainly research has made significant contributions, but many studies have been mainly confirmations of empirical common sense knowledge which stems from the observations of millions of students and teachers over decades or centuries. Those warranted assertions which are derived from experience generally also have a quality of analytic knowledge among them because reasoning can be (and commonly is) used to infer consistency among the statements. Likewise, the knowledge also has a normative quality because the statements about testing are consistent with sound values. Indeed, if those assertions of common sense knowledge about testing were not consistent with sound values, the educological foundations of almost all of modern education would be shaken. Certainly a few scholars, teachers, parents or students might challenge some aspects of the assertions for specific cases, but the body of educology stands firm with the common sense knowledge about testing as the core of educational measurement.

Scientific Educology of Student Attitudes about Test Formats

In addition to the core knowledge of testing based on the common experience of teachers and students, a vast literature of scientific educological studies about testing methods has been developed over the years. Entire organizations, both public and commercial, exist to study and improve testing methods and measurements.[2] Specific measurement issues such as those relating to special education, socio-economic bias and the use of new technology are studied in depth. In general, the research results have constituted "fine tuning" rather than fundamental adjustments to the common sense knowledge of warranted assertions about classroom testing. As evidence of this, change in education has been generally quite slow. Tradition and inertia have been exceptionally strong when it has come to the education of one's children. In short, the warranted assertions from common sense knowledge about testing are currently dominant and are likely to remain so.

Within the educology of testing, the topic of student attitudes about test formats is of very minor imporance. A review of several highly regarded American textbooks on educational measurement (including Thorndike and Hagen [1977] and Gronlund [1985]) found no reference whatsoever to what students think about the various formats of educational measurement. The lack of information in standard textbooks indicates that teachers-in-preparation are not provided in their classes and coursework with information about the attitudes to be expected from their students. By implication, the absence of treatment of this topic in basic textbooks is evidence of the assumption that the knowledge which teachers need about student attitudes toward test formats is sufficiently understood from the common sense experiences and attitudes which those teachers formed when they themselves were students.

Searches of the research literature about test formats yield few academic research articles specifically comparing student attitudes in relation to different types of test formats. Many of the recent references are like that of Laffitte (1984), and Arkin and Schumann (1984) which discusses attitudes to variations within one format of testing. Papers such as Marlarkey and Aiken (1986) are descriptive of current testing practices in specific schools. However, systematic comparisons of student attitudes toward a range of classroom testing formats are very few, and most date back several decades.

Four studies with original data, plus one review of eight studies in the 1920s, discuss student attitudes about test formats. Ruch (1929:3-26) summarizes the history of examinations. He points out that not until 1845 did Horace Mann formulate "a clean-cut concept of the written examination and its superiority over older methods such as the oral quiz." Subsequently, as a reaction to the subjectivity in marking traditional essay-type examinations, educators began development of standardized tests in the early 1900s. By the mid-1920s, there were no fewer than 500 different standardized tests with combined sales of at least 20 million copies per year. The standardized tests offered norm referencing and objective (i.e. uniformly impartial) scoring, but they suffered from inflexibility, high cost and poor question construction (Ruch, 1929:21-23).

One unintended but positive result of the early standardized tests was the exposure of thousands of American teachers to the new methods for objective tests. In the 1920s, the true/false, multiple choice, matching and fill-in-the-blank formats were called "new type" examinations.

> The objective or new-type test is essentially a hybrid. It represents the objectivity of the standard[ized] test without the [costs and rigidity] of experimental study and standardization [Ruch, 1929:24].

As Ruch predicted,

> the objective examination, when perfected, will be the principal reliance of the classroom teacher for the next few decades to come [p. 25].

The new-type tests attracted the attention of researchers in education. Ruch's book (1929) is an excellent summary of the educology of objective tests in their initial years. One full chapter (pp. 130-137) is devoted to studies of student attitudes toward test formats. Four minor studies with sample sizes of 200 to 300 students found "that preference for new vs. old types runs in the ratio of nine to one" (p. 137). Four other studies with samples ranging from 130 to 170 students included more quantified results. For example, Brinkley (1924) found 16 percent of pupils preferred only essay tests, 26 percent preferred true/false, and 56 percent preferred multiple choice. Somers' (1926) sample ranked the methods. True/false was preferred, followed by matching, multiple choice and oral quiz. There was a tie between the written examination and the completion test for the least preferred.

These early studies did not use quantitative research methods as known today. The results appear imprecise. Also, because these studies were in the early years of objective testing, the students' background experiences with objective tests were limited.

> A second part of Somers investigation showed, however, that a better attitude toward [objective type] examinations resulted from a semester's use of examinations as an integral and constructive part of instruction [Ruch, 1929:132]

In other words, newness and the resultant lack of student familiarity with the "new-type" tests of the 1920s led to less favourable attitudes toward those test formats.

Still in the pre-machine scoring era, Bender and Davis (1949) surveyed the opinions of 1,040 students in 41 different secondary schools. In terms of test preferences when students *are not given an opportunity to study* the percentages of students selecting each type of test were as follows: multiple choice, 49 percent; true/false, 23 percent; matching, 15 percent; essay, 7 percent; completion, 4 percent; problem-solving, 2 percent. The order was almost reversed when the students were asked which type of test would best show knowledge when students *are well-prepared in the subject* : essay, 38 percent; completion, 29 percent; problem-solving, 15 percent; multiple choice, 9 percent; true/false, 6 percent; matching, 5 percent. It is unfortunate that the issue of student preparedness was not kept separate from the questions of preference and perception of ability to evaluate. One can only speculate about student preferences if the students did have adequate opportunity to study for a test.

Bender and Davis (p. 59) also found an almost perfect rank order correlation between student perceptions of a test format's ability to show knowledge (given above) and which test formats students believe cause them to study hardest. That result is logical and in a desirable direction. It is also at least partially explanatory of why students do not prefer certain types of tests. Test formats which are perceived to require more study are less preferred by students.

A comparison of true/false questions about factual knowledge versus short answer (complete sentences) questions with explanation and argumentation would hardly seem fair or meaningful. The short answer format is clearly perceived as the better evaluator. Nevertheless, Cirn's (1986) study of these styles of questions yields meaningful results about students as test takers and about instructors as test makers. The evidence supports the notion that a combination of test methods is beneficial for correctlly scoring and ranking students. Cirn also points out how some unfavourable attitudes toward a test format could be the result of "the individual instructor's misapplication of the question type rather than anything inherent in the approach" (p. 37).

Five test formats were ranked by 134 adult learners (Weare, 1984). Multiple choice was the most preferred, with essay a close second. Then came true/false, matching and filling-in-the-blank. When asked for the least preferred types, the students again named the essay format. Weare does not explain this antipathy toward essay tests; her main focus is on test anxiety. Test anxiety in adult students was found to be heightened and also alleviated by each test format. Although Weare's study does not present quantitative analyses, it appears to this reviewer that liking or disliking a test format is highly personal and largely based on the student's prior experiences with each test format. The roles of such experiences and perceptions are probably accentuated in adult learners since they are further removed from their major test-taking years in secondary school. Unfortunately Weare did not present data on the level of experience of her respondents with each test format.

Numerous aspects of the article by John F. Check (1982) have relevance to the educology of student attitudes about test formats. Although 431 college students responded to a questionnaire with quantifiable questions, only rank orders were reported. Multiple choice was the most preferred, followed by short answer essay, extended essay and true/false. The order for how well the test formats evaluate student performance in class was only slightly different. Short answer essay was best and true/false was poorest, with a tie between extended essay and multiple choice.

Grade point average (GPA) was found to be related to preference for extended essay and to affirmative opinions about the ability of that format to evaluate best.

A total of eight studies in the 1920s and four from 1949 to 1986 have been summarized above. Their methods and results have several things in common. First, with two exceptions, sample sizes have been under two hundred students. Second, preferences have been recorded in ballot-type surveys, such as "which test format is best." The result is a rank order of the number of votes cast. Third, none of the studies actually asked each student to state how much he or she liked or disliked each test format. Fourth, in four of the five studies with clear comparative data, multiple choice was ranked as most preferred or liked. Fifth, student preferences for true/false are inconsistent. That method was ranked first, second (twice), third and last in the five studies. Sixth, matching, studied only three times, is "middle-of-the-road," being neither best nor worst. Seventh, student preferences for essay tests are mixed. It appears that adult (more mature?) students and students with higher grade point average (GPA) (academically stronger?) have a preference for essay tests. Therefore, results from surveys with small sample sizes can be susceptible to wide ranging attitudes toward essay tests depending on the sampled population. Eighth, in four out of four studies, the fill-in-the-blank (completion) method was the least preferred, or it tied for the least preferred. None of the studies in the reviewed literature suggests any reasons for this low rating. Ninth, only two studies also reported student perceptions of the ability of the test formats to evaluate learning. Both studies had methodological limitations. Only two conclusions are supported by both studies: (1) some form of essay response was rated higher than the objective test formats; (2) multiple choice was rated higher than true/false in ability to evaluate learning.

In summary, seven decades of usage of diverse testing methods have produced minimal research on student attitudes about test formats. Five factors mitigate against such studies.

First, it is not a hot topic. Most teachers and educational administrators appear to be fully satisfied with their common sense knowledge about student attitudes toward testing. It is not the type of topic which normally gains publication.

Second, student preferences for test formats are not a major consideration when teachers design their evaluation methods.

Third, in many areas of the world, the number of test formats actually used is quite limited. Essay questions, short answer responses and fill-in-the-blank questions have almost exclusive reign in education outside of the U.S.A. Multiple choice and other machine-scored testing methods are simply not frequently used in most other countries of the world (Anderson and Saliba, in press).[3]

Fourth, although teachers and students have individual preferences and biases for certain testing formats, there is no scientific evidence which clearly proves that one testing format is substantially superior to the others. *If* one or two formats were ever proven to be clearly superior in all ways, the pressures from administrators and parents to provide the best education possible would override the experiential common sense knowledge about testing. But testing is influenced by many factors and objectives: specific "must know" knowledge vs. "higher order" learning vs. reasoning vs. writing ability vs. frequency of testing vs. time/budget constraints vs. number of questions needed to cover the subject matter vs. large classes vs. small classes, etc. No single test format can possibly be best in all ways. Only two preferences appear to be supported by research and common acceptance: (1) increased frequency of testing (Nungester and Duchestel, 1982) and (2) use of a variety of testing formats (because variety appears to be beneficial to learning). Even those two assertions are open to challenge.

Fifth, for about three-quarters of the twentieth century, there were no new formats for educational testing. The multiple choice format had its debut and spread in America in the early years of this century. This "new type" of test format attracted attention (e.g. Ruch, 1929; Lee and Symonds, 1934), but student attitudes about it were a relatively minor concern. Even the machine-scoring methods arising since the 1950s did not alter the format of multiple choice questions; computer assistance simply made the scoring and analysis easier. Only in the 1980s have two significant enhancements on media and format taken place from the students' point of view. One is adaptive testing of students at microcomputer terminals, but it is more a change of medium than of question format. Furthermore, adaptive testing requires substantial expenditures for equipment, and it does not utilize the established medium of pencil and paper. The second enhancement is MDT multi-digit testing, of which more will be said later.

In short, the study of student attitudes about testing has not been a topic of educological concern. Perhaps that is as it should have been. Popularity of testing formats with students should not be an influence on teachers, unless all other things are equal. But is it the case that all other things *are* equal? If the research presented in the remainder of this article *does* substantiate its three main hypotheses, then the interest in student attitudes can again be a "backwater" topic. Essentially, the justification for this article is to confirm (or reject) two commonly accepted statements about hierarchies of test formats and also to examine how a new test format for the MDT multi-digit technique fits (or does not fit) into the two hierarchies.

Three Hypotheses for Student Attitudes about Testing Formats

The first objective of this research is to offer quantitative data to substantiate (or refute) the conventional wisdom of the existence of a hierarchy of student preferences for testing formats. Preference is measured not simply by a ballot vote, but as the degree to which students dislike or like each test format. The hypothesis is that such a hierarchy does exist.

The second objective is to determine if and where the newly devised MDT multi-digit test format fits into that hierarchy. The MDT testing technique was conceived as a machine-scoreable approximation to fill-in-the-blank questions, that is, questions for which a discrete word (or numeric response) is the correct answer. Therefore, the second hypothesis is that the MDT multi-digit test format will be perceived and preferred by students at levels which are between those of the fill-in-the-blank format and the multiple chioice and matching formats.

The third objective is to quantify student perceptions about how well each test format evaluates learning. The hypothesis is as follows: *Not only does the hierarcy for the evaluation of learning exist, but that it is the inverse of the hierarchy of student preferences.*

Therefore, three major issues need to be addressed. One is the analysis of student attitudes toward the MDT multi-digit test method. The attitudes need to be measured properly, and then correlate variables can be sought. The second issue is to compare on an equal basis the student preferences for each of the seven types of testing. That is, the task is to determine which test formats students like and dislike. The third issue is to determine student perception of how well each test method evaluates student learning.

Seven Testing Formats

The seven test formats and their abbreviations as used in this study are given below. They are in rank order of the general complexity of their responses in terms of the number of alternative responses from which the studnets are to formulate their answers.

1	[T/F]	True/False (dichotomous responses to a single statement)
2	[MC]	Multiple Choice (usually five alternative responses for each question stem, sometimes responses are lengthy phrases, students are expected to read all alternatives)[4]
3	[MAT]	Matching (short lists of discrete responses, usually fewer than 20 foils shared by several question stems; students usually read all of the foils)
4	[MDT]	MDT Multi-Digit Testing (long list of up to 1000 discrete alphabetized responses; short lists function like matching, lists can be long to discourage searching to recognize a response)
5	[FIB]	Fill-in-the Blank (infinite mental bank of discrete, free response)
6	[SA]	Short Answer (one or two sentence responses in free format)
7	[ESS]	Essay (paragraph or longer responses in free format)

The first three formats can be machine-scored while the last three are manually scored. All six of those methods are widely used, and they are familiar to students. The middle method, MDT multi-digit testing, is less well known because it became available only in the mid-1980s.

Explanation of the MDT Technique

The MDT multi-digit testing method is essentially a *machine-scored "fill-in-the-blank" test*. Technically, the MDT format has all of the following characteristics: machine-scored, clued free-response, discrete answer, multiple-digit and long-list "answer bank" with enhanced computer assisted processing and feedback.

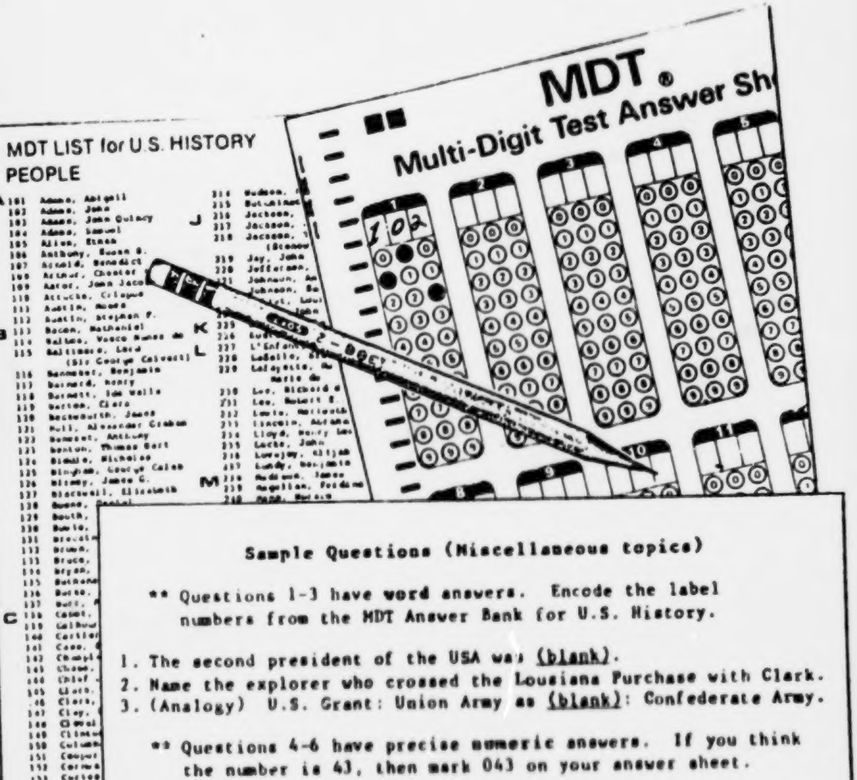
The stems of the questions are prepared in a normal manner. As shown in Figure 1, an example would be: "Name the second president of the United States." Students who know the answer look at a provided *alphabetized* long-list to obtain the associated label number. The label number is marked on a machine-readable answer sheet. The students who do not know the answer are unlikely to select the correct label because the list (or "answer bank"), with up to 1,000 discrete alternatives, is intentionally too long to allow searching for unknown answers. Those who know the answer (John Adams, in this example) will easily find the code number in the "A" section of the MDT list. Much more thorough descriptions and discussions of the technique are in the book, *The MDT Innovation* (Anderson, 1987a), which also describes relevant microcomputer software and reports.

The multi-digit testing technique has been used since 1983 with over 8,000 university students at Illinois State University, and it has recently been introduced in several schools. The MDT method is applicable to all fields of study at all educational levels, from upper elementary (primary) through undergraduate and graduate levels in university. The technique is appropriate for training programs and competency testing. Medical students and practitioners are expected to know certain facts or derive discrete responses about anatomy and medicine, while elementary (primary) school pupils are expected to know facts or make calculations appropriate to their grade level. Instructors retain complete control of question content and difficulty, as with regular fill-in-the-blank testing. The MDT method is *not* limited to factual recall. Application and higher order questions are quite appropriate if the correct responses are discrete terms or numerical values.

Student attitudes about the MDT multi-digit test format have

Figure 1

Examples of MDT Multi-Digit Testing Materials Including Questions, "Answer Bank" List and MDT Answer Sheet


MDT LIST for U.S. HISTORY
PEOPLE
A
B
C
D
J
K
L
M
MDT®
Multi-Digit Test Answer Sh
1
2
3
4
5
8
9
10
11
102

Sample Questions (Miscellaneous topics)

** Questions 1-3 have word answers. Encode the label numbers from the MDT Answer Bank for U.S. History.

1. The second president of the USA was (blank).
2. Name the explorer who crossed the Lousiana Purchase with Clark.
3. (Analogy) U.S. Grant: Union Army as (blank): Confederate Army.

** Questions 4-6 have precise numeric answers. If you think the number is 43, then mark 043 on your answer sheet.

4. What is the atomic weight of a molecule of H_2O?
5. Solve this equation: X = 22 + 8 (7 + 3).
6. If a population is growing at a rate of two percent per annum, how many years will it take for that population to double?

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been quite varied. Quantitative analyses in the initial years of use provided only simple tallies which showed that approximately half the students considered the MDT method to be as acceptable or better than other testing methods (Anderson and Kinzler, 1984). The other half disliked the multi-digit method; numerous students paid "back-handed" compliments such as "it requires me to study too much." One objective of the research reported in this article is to identify student attributes which relate to student attitudes about the MDT testing method.

The MDT testing technique is not a research instrument in this study. Rather, it provides the "treatment" about which students express their attitudes. The method is examined in its hypothesized role as an intermediate format between multiple choice and fill-in-the-blank test styles. The effects of "appropriate" usage is examined.

Data Source, Methods and Initial Analyses

At Illinois State University, a reasonably typical midwestern American university with over 20,000 students, 20 sections of students in diverse courses were exposed to the MDT method during the autumn (September-December) 1986 semester. The following courses (and number of student respondents) were represented, some with two or three sections: Earth Science (47 students), Weather (64), Map Reading (38), Latin America (62), Africa (21), Research Methods (21), Trigonometry (71), Structure of the Number System (194), Introduction to Marketing (90), Art Appreciation (423), Introduction to Film Art (186), Military Science (57), Marriage and the Family (56), Introduction to Criminal Justice Sciences (75), and Community Based Corrections (34). An end-of-semester "Survey of Student Opinions about Methods of Educational Testing" was collected from those students (see Appendix A). A total of 1,440 completed questionnaires constitute responses from 80 percent of all students tested by the MDT method in that semester. However, the instructors and their courses were not a random sample nor representative of the entire university. Therefore the results cannot be generalized as being applicable to groups of students with different attributes.

The varieties of class sizes, subject matter and instructors imposed some limitations on the research methodology. Especially noteworthy is the fact that the instructors were free to specify and modify their testing procedures as they desired, even in response to student feedback during the semester. In this regard, although a diversity of treatments (e.g. number of tests administered to a single class) could be observed, controls for comparisons among classes were not possible. These were viewed as methodological limitations. To have waited for more controlled situations would have meant several semesters of delay. On a more positive side, all students *within* a given class had uniform treatment.

The questionnaire included 58 variables for student charcteristics and opinions plus one variable to identify each of the 20 courses. The survey results were tablulated and processed. Where appropriate, Pearson analyses were used to identify correlations between variables. In the cases of discrete variables, ANOVA was utilized to identify statistically significant differences among the mean values.

Included in this questionnaire were five sets of seven questions dealing with the seven formats of educational testing being evaluated (see Appendix A). The first set (A or HS-EXP) asked how much experience did the student respondents have with these testing methods in their high school education. The second set (B or UNIV-EXP) was similar, but with reference to their university level education. The third set (C or TT-ABLE) asked the students to rate their ability as test takers with each of those even testing methods. The fourth set (D or EVAL) asked the students to rate the test methods according to how well each method could evaluate student learning. Finally, the fifth set (E or GENATT) asked, "In general, what is your attitude about each testing method?" Each of the seven questions in the five sets was rated with a semantic differential on a scale of 1 through 5.

For each of those five major sets of responses on the questionnaire, each of which included reference to the seven test formats, the overall average (mean) response was calculated when taking all of the seven testing methods into account at the same time. For example, in Set A (Questions 21 to 27), where the students comment on their experience with the testing methods in their high school education, each student's response values from 1 through 5 for each of the seven testing methods were added together. The possible range of values was from a minimum of 7 through a maximum of 35, if the student answered all of the questions. That value was divided by the number of responses given, thereby obtaining the average value per student. These were summed and divided by the number of students to determine the overall averages.[5] Since the responses in themselves refer to a wide range of tests from true/false through essay, and since it is likely that students do have preferences and different levels of experience, it is expected that the average scores should tend to be fairly uniform and close to the central value of 3.0. This is found to be the case, with four of the five means ranging from 3.2 to 3.6 and standard deviations ranging from 0.48 to 0.58. The one exception was the mean for university experience (2.9 with a standard deviation of 0.65). This slight inconsistency is attributed to the fact that 50 percent of the sample were first-semester university students who had not yet had a significant number of courses to have experienced a wide variety of testing methods at the university level.

Since these newly calculated means tend toward the central values, it was not unexpected that those five composite variables yielded almost no statistically significant nor noteworthy correlations with the personal charcteristics of the students (Questions 1 through 18 on the questionnaire). The only instances where the correlation coefficients exceeded 0.20 were with reference to Set C (test taking ability) which correlated with the following student attributes: (Question 6) "overall grade point average" with a value of r - 0.287; (Question 9) student self-rating of their "natural intelligence (ability)" with r - 0.363; (Question 10) "expected grade" with r - 0.271; and (Question 11) "deserved grade" with r - 0.225. In other words, the academically stronger students considered their abilities to take tests in a full range of formats to be grearer than did less strong students. Apart from the above mentioned correlations, the data indicate that the five composite sets of variables are basically independent of the individual characteristics of the students.

The average student responses for each of the seven test

Table 1

Mean Values of Student Responses to Five Questions about each of Seven Test Formats for the Total Sample (N-1,440) and the "Appropriate" Subsample (N-921)

[N.B. Unless shown in parentheses, the means for the "inappropriate" subsample are virtually the same as those for the other two means.]

	Attitude (E)			Rate How Well Evaluates (D)			Ability as Test Taker (C)			Experience in University (B)			Experience in High School (A)		
	TOT	APP	INAP	TOT	APP	INAP	TOT	APP	INAP	TOT	APP	INAP	TOT	APP	INAP
1 T/F	3.21	3.11	(3.37)	2.67	2.65		3.44	3.39		3.16	3.17		3.99	3.99	
2 MC	3.97	3.87		3.40	3.39		3.75	3.75		4.33	4.38		4.35	4.36	
3 MAT	3.55	3.56		3.30	3.31		3.73	3.75		2.66	2.67		3.82	3.83	
4 MDT	2.49	2.89	(1.74)	3.12	3.46	(2.49)	2.86	3.18	(2.27)	2.37	2.48	(2.15)	1.35	1.32	
5 FIB	2.87	2.88		3.79	3.86	(3.68)	3.16	3.20	(3.09)	2.45	2.44		3.63	3.66	
6 SA	3.17	3.14		4.04	4.06		3.49	3.49		2.46	2.46		3.69	3.71	
7 Essay	2.99	2.93		4.12	4.14		3.50	3.47		2.74	2.73		3.50	3.53	

TOT = total
APP = appropriate
INAP = inappropriate

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formats in each of the five sets were also calculated. These 35 averages for the 1,440 respondents are in the columns marked TOT (for total sample) in Table 1. These values are discussed later.

The Composite Variable of Student Attitudes (ATT) Toward the MDT Method

In an earlier analysis of the data (Anderson, 1987b), the research focused on student attitudes toward the MDT method. The first conclusion was that student attitudes had a nearly normal distribution for all seven test formats except for the MDT method. (See Figure 2; the mean values for Questions 49-55 are given in Set E in Table 1.) In a bimodal distribution, thirty percent of the 1,440 respondents gave the least favourable ("strongly dislike") rating as their attitude (Question 52) about the MDT format of testing.

Five source variables (Questions 52, 56 57, 58 and 59 in Appendix A) were combined to formulate a composite dependent variable of attitude (ATT) toward the MDT method (see Figure 3). A reasonable spread of responses was noted for each of the five source variables. The distributions of Items 56 and 57 ("would recommend MDT for this course" and "for other courses," respectively) were notably similar. Although technically the responses are ordinal-level data, the assumption of an interval scale was made for the purposes of data analyses. Correlation coefficients (Pearson's r) were calculated (see Table 2). The range was from 0.5358 to 0.7380. The latter coefficient was for Questions 56 and 57, indicating that those two variables were similar but not merely identical measures.

The composite dependent variable called ATT (Attitude) was formulated by summing for each student the response codes (1 through 5) for all five source questions. The sum was divided by the number of source variables which each student answered. This generated a mean attitude about MDT testing for each student, ranging 1 to 5. The ATT variable correlated highly with each of the five source variables (the range of Pearson's r was from 0.7791 to 0.9081) (see Table 2). It was decided that the

Figure 2

Histograms of Student Attitudes about Disliking or Liking Each of Seven Test Formats (Whole Sample, N-1,440)

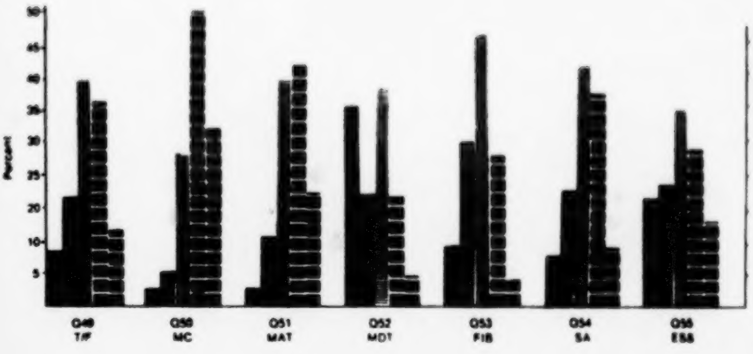


Figure 3

Histograms of Five Expressions of Student Attitudes about the MDT Multi-Digit Testing Format, Plus the Composite ATT Attitude Variable (Whole Sample, N=1,440)

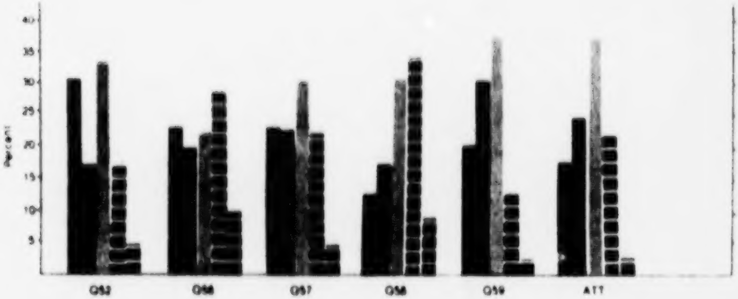


Table 2

Pearson Correlation Coefficients Between the Five Variables (Questions 52, 56, 57, 58, 59) that are Combined into the Dependent Variable of Attitude (ATT) toward the MDT Method

[N.B. p < 0.0000 in all cases; upper values are for the entire sample (n=1,400+); lower values in parentheses are for the subsample which considered the MDT method to be appropriately used in the course (n=900+)]

	ATT	52	56	57	58	59
ATT	-----					
52	.8461 (.8178)					
56	.9081 (.8683)	.7165 (.6412)	----			
57	.8617 (.8339)	.6530 (.5763)	.7380 (.6931)	----		
58	.7791 (.6502)	.5214 (.3699)	.6528 (.4798)	.5864 (.4232)	----	
59	.8385 (.7771)	.6789 (.6018)	.7107 (.5837)	.6695 (.5791)	.5358 (.3380)	----

---

composite dependent variable ATT represented the characteristics of student attitudes toward multi-digit testing better than any single one of the five source variables. The attitude variable ATT was treated as interval data in subsequent analyses.

For the entire sample, the average attitude (ATT) level is 2.7 on a scale from 1.0 to 5.0. This average is slightly lower than the "neutral" attitude of 3.0. (After adjustments for "appropriateness" described later, the mean value rose to 3.1.)

Analyses of the ATT Attitude Variables

Of the 54 independent variables, several revealed interesting relationships with the ATT attitude variable.

Gender (Question 1): In comparison with the mean value of 2.70 for attitude about MDT testing, the means for males (46 percent of the sample) was 2.58, and 2.81 for females. Although the difference of only 0.23 seems small on a five point scale, it was statistically significant when tested with ANOVA. Females are generally believed to have more favourable attitudes about formal education than do males. This holds true in their attitudes toward the MDT technique, but the difference is small.

Expected Grade (Question 10) and Overall Grade Point Average (Question 6): The correlation (r=0.320) between expected grade and attitude is significant both in statistical (p=0.0000) and practical contexts. Although statistically significant (p=0.0000), the r correlation value of 0.171 for GPA is not as strong as for the expcted course grade. This is especially interesting because the correlation between GPA and expected course grade is only 0.477. Therefore, the r-squared regression value of 0.228 indicates that less than one quarter of the variation in current in-course academic performance, i.e. in expected grade, is explained by past academic performance as measured by grade point average (GPA). Barring the possiblity of students stating grossly unrealistic grade expectations, these findings give encouragement to instructors seeking to serve better the top students. The interepretation offered is that the increased academic rigour of MDT multi-digit testing poses desirable challenges to those students.

Prior Experience/Familiarity with Test Formats (Questions 21 through 41): Students were asked five questions about each of the seven formats of tests. Three of the five questions dealt with the student's prior experience and self-perceived ability with those test formats. As expected, students indicating experience and ability with MDT tests also had more favourable attitudes ($r=0.253$ and $r=0.612$, respectively, at $p=0.0000$). Those two variables (Questions 31 and 38) only correlate with each other at $r=0.259$, indicating that experience heightens perceived ability, but that experience is not the sole determinant of such ability. Question 38 yielded the second highest correlation with the ATT attitude variable in this study.

One secondary hypothesis was that experience and ability with fill-in-the-blank tests would favourably increase the attitudes about MDT testing. The very weak correlation ($r=0.073$) attained only a $p=0.003$ level of statistical significance. A possible explanation is that several of the instructors used short lists of responses, making their exams more like matching tests. The correlation of the ATT attitude variable and ability with taking matching tests was $r=0.105$, at $p=0.0000$.

Attitude toward Instructor (Question 7): The third highest correlate with the ATT attitude dependent variable was student rating of their instructor. With $r = 0.349$ and $p=0.0000$, the impact of the instructor upon student attitudes toward MDT testing is most noteworthy. It also relates to the next variable discussed.

Appropriate Use of the MDT Format (Question 16 -- "Are the MDT testing procedures as used in this course appropriate for the course materials?"): The correlation of $r=0.639$ was the highest correlation of any of the independent variables with the ATT attitude variable. Furthermore, since the correlation coefficient between Questions 7 (instructor) and 16 (appropriateness) is only $4=0.294$, those third and first highest correlates were not simply mirrors of each other and can be used jointly in subsequent analyses to study the course-related influences upon attitudes to the MDT and other test formats.

Analyses of Course-Related Influences

The subsequent analyses were attempts to control for course-related influences upon the ATT attitude variable. A third independent variable, Question 18, concerning the fairness of the grading in the course as perceived by the student, was considered in conjunciton with Question 7 (rate the instructor) and Question 16 ("appropriateness"). The three variables were combined by taking the mean scores for each student for those three variables and forming a derived variable called "bad expereince" (BADX).

Upon computation of the BADX derived variable, a dichotomous split was made at the mean value of less than or equal to 2.0 out of 5.0. Six of the 20 course sections in the survey had high percentages of students indicating a "bad experience." Those percentages were from 15.8 up to 26.1 percent. None of the other 14 classes was above 8.5 percent, with the average being only 3.2 percent. Those six classes were temporarily removed from the sample.

Upon calculation of new values of the student attitudes (ATT) concerning the MDT method, the removal of the six classes with "bad experience" produced only a relatively minor shift toward making the student attitudes about the MDT method approximate a normal distribution. The interpretaion was that the derived variable called "bad expereince" was insufficiently precise to be used as a control or filter for the data.

An analysis was made of only Question 16 (appropriateness of the MDT method in the course), which was the single most highly correlated variable with ATT. Tallies revealed that five course sections had high percentages of students indicating the "very inappropriate" or "inappropriate" categories. Those high percentages ranged from 47.3 percent up to 73.5 percent. The other 15 classes had percentages of 34.0 percent or lower, the lowest being 5.0 percent. Interestingly, only three of those five courses were also among the six courses identified in the bad experience (BADX) derived variable discussed above. In other words, two new classes were added in and three other classes were returned to the more normal categories. Essentially, the variables on rating the instructor (Question 7) and commenting on the fairness of the course grading (Question 18) were clouding the issue concerning student attitudes toward the MDT method.

When calculations were made of the ATT attitude variable for the 15 sections which had high percentages of students indicating the appropriateness of the MDT method for that course, the distribution of student attitudes (ATT) about the MDT method approached a normal curve. However, there were still relatively high percentages of students in the lowest categories. The interpretation was that the elimination of these five classes had the same impact as when the six classes were separated in the "bad experience" analysis. In both cases the net effect was also to remove many students who did *not* have unfavourable attitudes toward the MDT method, while concurrently leaving within the remaining course sections numerous students who felt that the MDT method was inappropriate for the subject matter.

Question 16 allowed for four response levels (from "very inappropriate" to "very appropriate") concerning use of the MDT method in the course. Ogives were drawn (see Figure 4) for each of those four levels to show the cumulative percentages of students at each of the calculated attitude levels of the ATT variable. The data as graphed indicate that there would be an appropriate division between levels 1 and 2 on the one hand and levels 3 and 4 on the other. The students who responded at levels 3 and 4 ("appropriate" and "very appropriate") combined to form an almost normal curve of student attitudes (ATT) toward the MDT format, as illustrated in the central graph in Figure 5 and Figure 6.

Rationale for the "Appropriate" Subsample

Based on the above data and arguments, it was decided to analyze a subsample which contained only tose sutdents who individcated that the MDT method, as used in their class, was appropriate or very appropriate. The rationale for this decision is not on the basis of sampling technique, but on the basis of having a subsample which is representative of what would be exprected when this MDT test method is used appropriately.

Appropriateness of educational testing is a complex issue composed of at least three major factors. One factor is nhow the instructor utilizes the method in the classroom. In this research, it was impossible to control each of the instructors in terms of the

Figure 4

Ogives of Student Attitudes (ATT) about the MDT Method for Four Levels of Appropriateness (Question 16)

[N.B. Left tails less than 1 are extrapolations.]

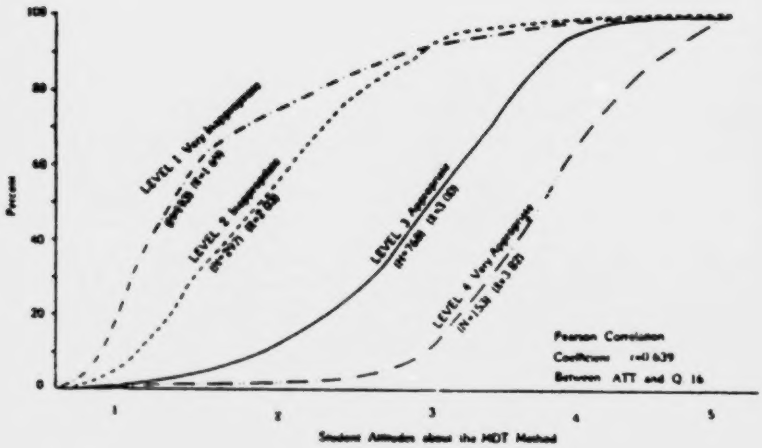


Figure 5
Histograms of Student Attitudes about Disliking or Liking Each of Seven Test Formats
(N B "Appropriate" subsample, N=921, compare with Figure 2.)

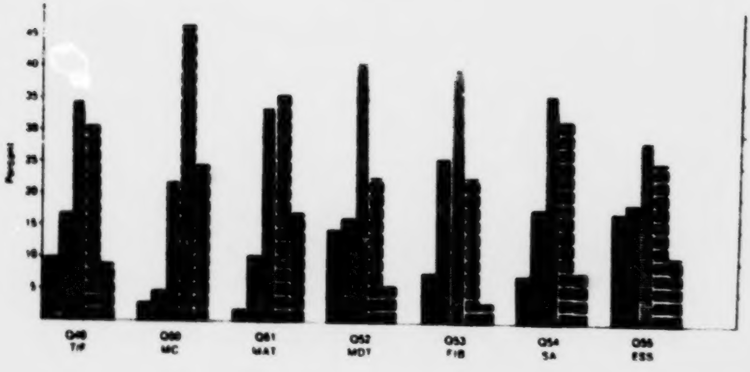
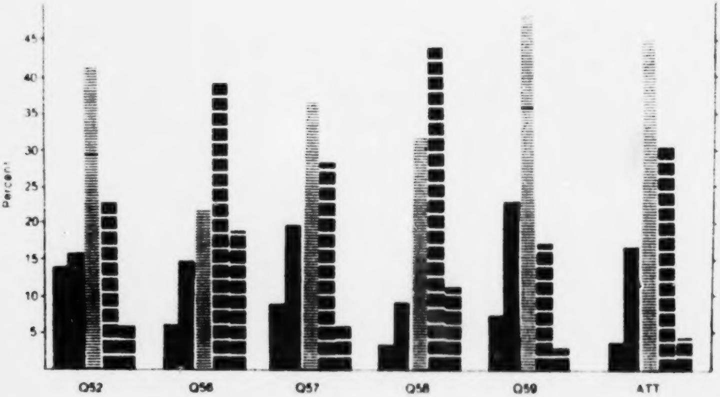


Figure 6

Histogram of Five Expressions of Student Attitudes about the MDT Multi-Digit Testing Format Plus the Composite ATT Attitude Variable

[N B Appropriate subsample, N=921, compare with Figure 3]



styles of questions written with the MDT method. Nor were there controls over the amount of explanation of the MDT method given by the instructors to their students. In other words, an instructor who was unclear with his or her course objectives and/or was inconsistent with the usage of this or any other testing method for evaluating those course objectives would be essentially "evaluating [the students] inappropriately" and would receive such a comment from the students on a survey questionnaire. This rationale is supported by the previously cited research by Cirn (1986:37).

Second, it is possible that some subject matter included in the tests was not appropriate for the MDT method. Determining what is and is not appropriate in each of the many disciplines is an issue which will require time and care to refine. It is reasonable to expect in the not too distant future that experienced instructors will not use the MDT method in instances where it is indeed inappropriate.

Third, it is also reasonable to expect that students who feel that a new test format is inappropriate might change their minds in the future when they are more familiar with the method. (Somers' research [1926] cited earlier is supportive of this expectation.) For example, students absent during the explanation of the testing method could subsequently be surprised by the rigour of this new machine-scored testing technique. It would be natural for some of those students to complain and to blame the method. In other cases the students had only had one or two MDT format tests prior to completing the questionnaire. These situations relate to the issue of the "newness" of the MDT method.

To a large extent, Question 16 relating to "appropriateness" is a surrogate measure for the "newness" of the MDT testing method. Newness can be a factor with (a) insufficient experience and preparation on the part of instructors, (b) inappropriate use for certain subject matter, or (c) a lack of familiarity with the method on the part of students. In any combination of circumstances, the issue of newness is highly suggestive of the issue of appropriateness. Therefore, it is reasonable to expect in the future that relatively fewer students would continue to respond that the MDT method was inappropriate in their course. This change resulting from increased familiarity might well require several years of experience. But perceived appropriateness is as likely to occur for the MDT test format as it has obviously occurred for the multiple choice and other test formats in the U.S.A. For the most part all of the other test formats are well understood and properly used by both instructors and their students.

As a test of the reasonableness of the preceding paragraphs, there should not be appreciable differences in the characteristics of the students who indicated that the MDT method was inappropriate in comparison with the characteristics of those who said that it was appropriate. No meaningful differences were found with this sample of students. As evidence, the separation of the "appropriate" subsample yields no noteworthy differences in student attitudes toward the other six test formats (compare Figure 5 with Figure 2.) There is no difference of meaningful consequence between the students who have been separated from and those who remain in the "appropriate" subsample. The latter are the students who indicated that the MDT method is either appropriate or highly appropriate for the course in which they were enrolled.

Analyses of the Seven Test Methods

The analyses which follow are based on data derived from the "appropriate" subsample described above. More explicitly, the subsample includes students who consider the MDT method to have been used appropriately in their course and who then responded to the questionnaire. It is assumed that the formulation of the subsample is a reasonable and sufficiently fair step in the analysis process to compensate for the newness of the MDT method without bias to the other six test formats. This assumption then premits the inclusion of the MDT format into the analyses with the other six traditional test formats. It is important to note that Question 16, which was the basis for construction of the subsample, is not a dependent variable used in the formulation of the composite attitude variable called ATT. Nor does Question 16 eliminate from the analyses the influence of the instructor and the characteristics of the students.

As shown by the numbers in the parentheses in Table 2, there are still strong correlation coefficients between the five source variables used to define the ATT dependent variable of student attitude. The selection of the "appropriate" subsample resulted in a reduction of the coefficients in all cases. Histograms of the response frequencies for each of the five source variables and for the composite dependent variable ATT are shown in Figures 3 and 6 for the total sample and the "appropriate" subsample respondents, respectively. The impact of the division according to appropriateness is quite notable. Mean values for the "appropriate" subsample have raised approximately 0.5 units. The subsample is considerably more positive concerning these variables. For purposes of constrast, the negative feelings expressed by students in the "inappropriate" group are typified by mean values of approximately 1.7 for those five source variables.

How much the sampled students like or dislike each of the seven methods of testing are shown in Figures 3 and 5. After control for the issue of appropriateness of use in the classes (Question 16), the response to the MDT method is quite similar to the fill-in-the-blank style of test questions. Neither method is particularly well like, being at the same level as essay questions. It is not altogether surprising that the short answer questions are more favourably considered among the subjective formats of testing. The research reviewed by Check (1982) had a similar result. However, the matching and multiple choice formats are far more highly liked by the students. True/false is not as well liked.

Four observations are important relative to how students rate the seven testing methods in terms of their ability to evaluate learning (Figures 7 and 8). First, in all cases except that of the MDT method, the total sample and the subsample are notably similar. Second, in the case of the MDT method, the shift in the student responses is pronounced in a positive direction for the "appropirate" subsample. Third, in terms of mean values as summarized in column D of Table 1, the MDT method fits precisely into its hypothesized position between that of the fill-in-the-blank method and that of the machine-scored techniques. Fourth, the means decline steadily from essay at the highest end (see also

Figure 7
Histograms of Student Opinions of How Well Each of Seven Test Formats Evaluates Student Learning
[N B Total sample, N=1,440]

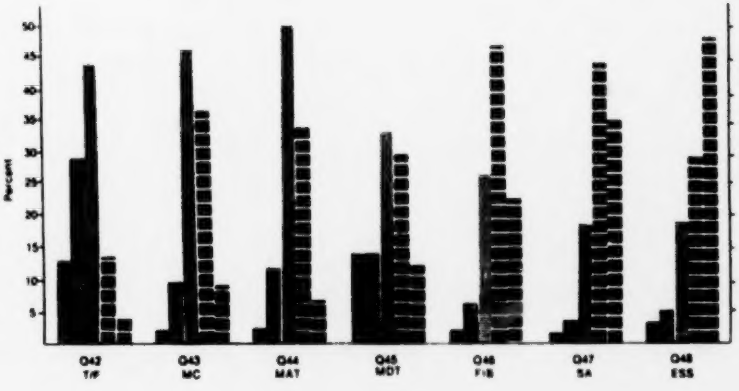


Figure 8

Histograms of Student Opinions of How Well Each of Seven Test Formats Evaluates Student Learning

[N B Appropriate subsample, N=921]

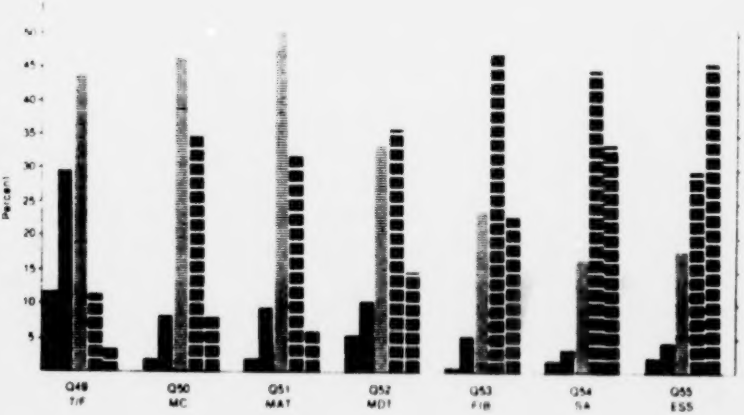


Figure 9

Graph of Mean Values of Student Attitudes (Like) and Perceptions of Evaluation Ability of Seven Test Formats
[N.B. "Appropriate" subsample, N-921]

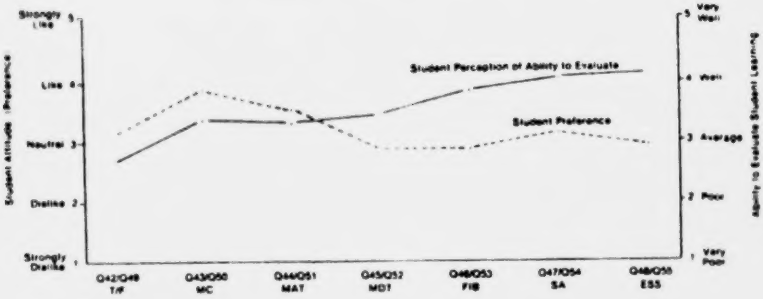


Figure 9). The mean for the true/false method is substantially lower than any other with regard to student perceptions of how well it evaluates learning.

Results and Conclusions

On the basis of mean scores, there are distinct hierarchies in the ratings of the seven test formats in terms of student attitudes about preference and ability to evaluate. Most notable is an inverse correlation between the two data sets (Figure 1). Three of the seven test formats (multiple choice, matching and the MDT format) are very similar in terms of student perception of ability to evaluate learning (Set D in Table 1). However, multiple choice is the highest in the other four sets (A, B, C and E) of questions. Interestingly, the fill-in-the-blank method is third highest in ability to evaluate learning (3.8), but is rated lowest in the other four sets. Evidently, the dominance of experience with multiple choice has had its greatest negative impact on the use of fill-in-the-blank questions. Essays are among the least liked but are rated highest in evaluation ability.

It is concluded that in the sampled body of American university students, the testing methods which are perceived to be the best evaluators of learning are the ones which the students like the least. This does not mean that students object to being evaluated well, but it does indicate a preference for easier methods, that is methods for which there are fewer resonses to be considered.

The ratings of the MDT method by the "appropriate" subsample fit as expected into the two hierarchies. The MDT technique appears to bridge between the machine-scored and free-response methods of evaluation. In the perceptions of students, the MDT method is similar to the fill-in-the-blank style of testing. In terms of the students' ability as test takers, they consider themselves to be less able with the MDT method (see Table 1). In turn, ability is partially a function of prior experience with the MDT testing method. The data sets A and B in Table 1 reveal that the students have virtually no familiarity with the MDT method from their high school experience, and comparatively little experience from their university courses. Future research should attempt to control for this lack of familiarity and then to see how familiariity impacts upon the students' stated attitudes and ratings of the MDT test method.

In general, students perceive hierarchies in the formats of educational testing. It is "human nature" for students to prefer the testing methods which they perceive to be easier. "Easiness" is related to both academic rigour and familiarity. In terms of rigour, the level of question difficulty generally rises as the number of alternative responses increases. The seven test formats can be placed in a general order of increasing complexity of responses: (1) true/fale, (2) multiple choice, (3) matching, (4) MDT multi-digit, (5) fill-in-the-blank, (6) short answer, (7) essay. Although exceptions can be cited, when compared, questions are not on an equal basis. The above list reflects, in general, the increase in mental activity needed as one goes up the list. The ability to score tests by machine also reflects this issue of less academic rigour in the less complex (lower numbered) formats. In contrast, students perceive the test formats with the greater number of response options as being better evaluators of student learning.

Familiarity with the different testing methods is a major factor in students' preferences and perceptions. In this regard, the newly devised MDT multi-digit test is not as favourably received by the students as are the other, more familiar, methods. However, as discussed in the section on "appropriate" usage, when allowance for newness is controlled, the MDT format fits into the hierarchies in a position between fill-in-the-blank questions and multiple-choice/matching questions.

Educological Importance of the Study

The improvement of education in America and elsewhere is in part dependent upon an increase in academic rigour in the courses offered. In the U.S.A., where any individual of reasonable competence can enrol in some institution of higher eduation, the percentage of young adults (ages 18-22) enrolled is extremely high. One outcome from this opening of the doors and extending of opportunities for higher education has been an increasing reliance upon machine-scored testing. Although such methods have their limitations, they are widely accepted because of a substantial body of research which couples nicely with the time-saving and financial benefits of machine scoring. On the other hand, as indicated by the student opinions about the testing methods, those machine-scored methods are rated lower as a means of evaluating student learning.

The incorporation of more rigourous methods of evaluation into the machine-scored realm has been a dream of many educological researchers and educators. However, efforts to incorporate the "free response" nature of essays and short answers and even fill-in-the-blank questioning have been frought with frustrations. The MDT method is specifically designed to be a machine-scored alternative for fill-in-the-blank style questions. In its present format and based upon in-class experiences, it appears to fill that niche successfully. Additional capabilities being developed could make the MDT technique an even better evaluation tool.

Regardless of the MDT method's ability to perform the tasks of educational measurement, its use in American education will depend a great deal upon its acceptability to students and instructors. For this reason, the above research is highly important as it can provide both instructors and students with an understanding that the method is acceptable when used appropriately. Specifically, the above reported research on student attitudes, when controlled for the factor of appropriate usage, should be especially useful in encouraging other instructors to utilize the method with confidence. The MDT method is demonstrated to be perceived by students as an acceptable step forward in the offering of different and more rigourous alternatives for educational testing.

Footnotes

1 An authoritative discussion and definition of educology is found in the writings of J.E. Christensen, the most recent of which is cited in the bibliography. Statements in this paragraph and elsewhere in this article are in reference to the conception of educology as explicated by Christensen.

2 In the U.S.A., the leading academic research society on testing is the National Council on Measurement in Education (NCME). It holds annual

conventions jointly with the American Educational Research Association (AERA), which has considerable interest in testing in its various special interest groups Private research on testing is conducted by the major corporations which produce and sell standardized tests used nationwide Examples are Educational Testing Service and Psychological Corporation

3 The Anderson and Saliba article describes three international models (situations) and foresees increased use of machine scored test formats because of the introduction of the MDT multi digit test method

4 One of the strengths of multiple choice questions is when the students are expected to read and ponder the five choices The choices are, in fact, as much part of the stem as they are the foils That charcteristic will result in some ambiguity when students indicate thier attitudes about multiple choice questions

5 It is acknowledged that the student responses are on an ordinal scale Therefore, the average values are at best an approximation of student responses

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APPENDIX A:

SURVEY OF STUDENT OPINIONS ABOUT METHODS OF EDUCATIONAL TESTING

Please answer these questions on the new MDT answer sheet (F3). Note that it has Short Answer SA (Essay) spaces at the bottom to make written comments to elaborate on the encoded responses.

START on QUESTION 21 on back of the answer sheet.

A. In your high school education, how much experience did you have with each of these test methods?

Question No.		Almost None;	Little;	Some;	Much;	Very Much;
21.	True/False	1	2	3	4	5
22.	Multiple Choice	1	2	3	4	5
23.	Matching	1	2	3	4	5
24.	MDT Multi-Digit	1	2	3	4	5
25.	Fill-in-the-blank	1	2	3	4	5
26.	Short answer (sentence +)	1	2	3	4	5
27.	Essay (paragraph +)	1	2	3	4	5

B. In your university education, how much experience have you had with each of these test methods?

Question No.		Almost None;	Little;	Some;	Much;	Very Much;
28.	True/False	1	2	3	4	5
29.	Multiple Choice	1	2	3	4	5
30.	Matching	1	2	3	4	5
31.	MDT Multi-Digit	1	2	3	4	5
32.	Fill-in-the-blank	1	2	3	4	5
33.	Short Answer (sentence +)	1	2	3	4	5
34.	Essay (paragraph +)	1	2	3	4	5

C. Rate your ability as a test taker in each of the following methods of testing. (Note: This is NOT a ranking; you could be poor or good at all.)

Question No.		Very Poor;	Poor;	Average;	Good;	Very Good;
35.	True/False	1	2	3	4	5
36.	Multiple Choice	1	2	3	4	5
37.	Matching	1	2	3	4	5
38.	MDT Multi-Digit	1	2	3	4	5
39.	Fill-in-the-Blank	1	2	3	4	5
40.	Short Answer (sentence +)	1	2	3	4	5
41.	Essay (paragraph +)	1	2	3	4	5

D. Based upon your test experiences, please rate these test methods according to how well they can evaluate student learning.:

Question No.		Very Poorly;	Poorly;	Average;	Well;	Very Well;
42.	True/False	1	2	3	4	5
43.	Multiple Choice	1	2	3	4	5
44.	Matching	1	2	3	4	5
45.	MDT Multi-Digit	1	2	3	4	5
46.	Fill-in-the-Blank	1	2	3	4	5
47.	Short Answer (sentence +)	1	2	3	4	5
48.	Essay (paragraph +)	1	2	3	4	5

E. In general, what is your attitude about each method of testing?

Question No.		Strongly Dislike;	Dislike;	Neutral;	Like;	Strongly Like
49.	True/False	1	2	3	4	5
50.	Multiple Choice	1	2	3	4	5
51.	Matching	1	2	3	4	5
52.	MDT Multi-Digit	1	2	3	4	5
53.	Fill-in-the-Blank	1	2	3	4	5
54.	Short Answer (sentence +)	1	2	3	4	5
55.	Essay (paragraph +)	1	2	3	4	5

56. Would you recommend the continued use of the MDT testing method in this course? 1. strongly "no"; 2. basically "no"; 3. neutral; 4. basically "yes"; 5. strongly "yes"

57. Would you recommend the use of the MDT method for any other courses? 1. strongly "no"; 2. basically "no"; 3. neutral; 4. basically "yes"; 5. strongly "yes"

58. Do you consider the MDT method to be a valid or invalid way of testing when applied to the learning of discrete facts? 1. highly invalid; 2. moderately invalid; 3. neutral; 4. moderately valid; 5. highly valid

59. If given the option to enroll in either of two sections of another course, knowing that one would use the MDT method and the other would not, what would be your choice? 1. Definately avoid the MDT method, even if you had to adversely adjust your schedule of other classes; 2. Try to avoid the MDT method if class schedule permits; 3. Neutral, it makes no difference; 4. Try to enroll in the MDT section if class schedule permits; 5. Definitely enroll in the MDT section even if you had to adversely adjust your schedule of other classes.

60. In comparison with studying for mutiple choice and fill-in-the-blank questions, how should a student prepare for MDT Multi-Digit questions on a test? 1. The same as for multiple choice questions; 2. The same as for fill-in-the-blank questions; 3. Just study normally because the three test methods are all so similar; 4. Altogether differently (please comment in the SA space on the answer sheet).

NOTE: For research purposes of comparisons and follow-up, mark your name and Social Security Number on the answer sheet. Your data will be confidential.

Please continue with the questions 1-20. These questions are answered on the front (Multi-Digit) side of the answer sheet. You are almost finished.

Question No.

1. What is your sex? 001=male; 002=female.

2. What is your class status? 001=freshman; 002=sophomore; 003=junior; 004= senior; 005=graduate; 006=other.

3. What is your age? (Encode the actual years. For example, if you are 21, encode 021.)

4. What is your major (or probable major)? 001=teacher education/special education; 002=social sciences; 003=fine arts/languages; 004=physical sciences/math; 005=computer/applied technology; 006=business management, accounting, marketing, etc.; 007=truly undecided. Please also write your major (or probable major) in space SA101 at the bottom of the answer sheet.

5. How closely does this course relate to your major and intended future employment? 001=Not at all; 002=very little; 003=some; 004=reasonable amount; 005 very much.

6. What is your overall GPA at ISU? 001=less than 1.75; 002=1.75 to 1.99; 003=2.00 to 2.24; 004=2.25 to 2.49; 005=2.50 to 2.74; 006=2.75 to 2.99; 007=3.00 to 3.24; 008=3.25 to 3.49; 009=3.50 to 3.74; 010=3.75 to 4.00.

7. Overall, how would you rate your instructor in this course? 001=bad; 002=poor; 003=average or okay; 004=good; 005=excellent.

8. Please classify yourself as an ISU student in terms of effort. 001=very low; 002=lower than most; 003=medium; 004=higher than most; 005=very high.

9. Please classify yourself as an ISU student in terms of natural intelligence (ability). 001=very low; 002=lower than most; 003=medium; 004=higher than most; 005=very high.

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10. What grade do you expect to receive in this course? 001=F; 002=D/F; 003=D; 004=D/C; 005=C; 006=C/B; 007=B; 008=B/A; 008=B/A; 009=A.

11. What grade do you think you deserve in this course (based on effort and what you have learned during this semester)? 001=F; 002=D/F; 003=D; 004=D/C; 005=C; 006=C/B; 007=B; 008=B/A; 009=A.

12. How much "prior knowledge" of the subject matter did you have before taking this course? 001=none; 002=very little; 003=little; 004=some; 005=much; 006=very much; 007=almost all.

13. Counting this course, how many courses at ISU have you had with tests using the MDT method? Code in the actual number. (For example, three courses would be 003.) Also, please name them in the space SA102 for written comments on the answer sheet.

14. Counting this course, how many of those courses using the MDT method are during this Fall 1986 semester? Code in the actual number. Also, please circle them in SA102.

15. In total for all your courses ever at ISU, how many tests have you taken with MDT style questions?

16. Are the MDT testing procedures as used in this course appropriate for the course material? Mark your answer and then please comment in the SA space on the answer sheet. 001=very inappropriate; 002=inappropriate; 003=appropriate; 004=highly appropriate.

17. Are the other testing procedures as used in this course appropriate to the course material? (Please comment and/or suggest alternatives.) 001=very inappropriate; 002=inappropriate; 003=appropriate; 004=highly appropriate.

18. Are you being graded fairly in this class? 001=very fairly; 002=unfairly; 003=average/fairly; 004=very fairly.

Please comment in the SA spaces on the answer sheet. We read your comments.

Please be sure that you have answered all of the questions. Incomplete data is unnecessarily difficult to analyze. Thank you for your cooperation.

International Journal of Educology, 1988, Vol 2, No 2

Book Reviews

Democratic Curriculum: Essays on Schooling and Society. Bill Hannon. Sydney, London, Boston: George Allen & Unwin and Victorian Secondary Teachers Association, 1985. Pp. 266. $12.95 (Australian currency), paperback.

Democratic Curriculum is an interesting collection of essays and letters about Australian education, most of which the author wrote for the Victorian Secondary Teachers Association's (VSTA) publication, *The Secondary Teacher*, from the late 1960s to the early 1980s. The essays address six broad topics: curriculum politics, credentialling, grading, universal schooling, curriculum reform and relationships among language, culture and literacy. Because each of the essays was written as a free-standing article, there is not a strong, coherent, fluent argument which proceeds from the front cover to the last page. Rather, each of the articles is a vignette, a comment upon a curriculum issue of contemporary times. Valuable editorial work has been done by Phil Noyce (at the time of publication, editor of the VSTA's *The Secondary Teacher*), and it provides transitions, linkages and contexts for the essays. Also, there is an overarching theme which does tie all of the essays together, and this theme is the worthwhileness of striving for the ideal of transforming state schools (i.e. government financed and government administered schools, or public schools) into something better than what they have been. Hannan's condemnation is that Australian secondary schools and their curricula have been "meritocratic." His ideal is that they should become "democratic." They have been operated as institutions to weed out and select the able few. They need to be operated as institutions to emancipate and empower, not the able few, but all students. The means of the empowerment is through access to and acquisition of intellectually rigourous, culturally important and socially, economically and politically significant knowledge. From this process, Hannan envisages all human beings (not just the privileged few) attaining the cognitive power to enjoy and to celebrate the fullness of life in ways which are befitting of human beings. In his view, the "meritocratic" curriculum functions as a gatekeeper for controlling access for the privileged few to the universities. The "democratic" curriculum provides access for all to the full range of valuable and significant knowledge within the culture of a society. To quote from the introduction,

> Bill Hannan is unusual among writers on education Much of his writing has enduring relevance, an interest and significance beyond the occasion for which it was produced Yet most of Hannan's work has been that of the activitist, and most of it has been written in the journals of teachers unions [Doug White, 1984, p 5]

White's assessment of Hannan's work can only be endorsed, for indeed, it does focus upon particular issues of a specific time and place, yet extends beyond the parochialism of those issues. Hannan writes in an engaging, easy to read style. His essays arrest the reader's attention immediately, and they sustain interest by simultaneously informing, provoking and challenging the reader. The essays provide a history about curriculum and also serve as a set of historical curricular documents of the times (from the Australia of the late1960s to the early 1980s).

From the educological perspective, *Democratic Curriculum* constitutes a good example of a set of well integrated essays in the educology of curriculum. The set ably illustrates how analytic philosophical educology, normative philosophical educology and historical educology can be blended into an amalgam of soundly argued and highly readable educological discourse.

The readership who would be interested in this work include, of course, university students, teachers in preparation, lecturers and professors with an interest in general curriculum, in the educology of politics and the politics of education, in the educology of society and the sociology of education, in philosophical educology and in historical educology. Also in-service secondary teachers, curriculum consultants, school principals, inspectors and senior educational administrators would certainly have an interest in the issues treated. Possibly primary teachers, parents and the more thoughtful and reflective of students among the high school population would like to be engaged by the educological challenges which this work provides. The work is certainly worthy of their time and consideration. Also, because Hannan's treatment of his chosen topics and issues extends beyond parochial concerns, readers who might not be particularly interested in Australian education, but who do have an interest in curriculum and education in general, would find *Democractic Curriculum* rewarding reading.

Editors

The MDT Innovation: Machine-Scoring of Fill-in-the-Blank Tests. Paul S. Anderson. Normal, Illinois: Multi-Digit Technologies Corp., 1987. Pp. xxi, 199. $14.95 (U.S. currency), paperback.

The MDT Innovation presents a description and rationale for using an innovative testing procedure, which the author has named, "multi-digit testing" (MDT). The testing procedure is one in which students are asked a question, and they indicate a single-term answer (e.g. a one or two-word answer). They select their answers from an answer sheet which has up to 1,000 possible answers listed alphabetically and coded numerically. They record their answer by entering the appropriate number for the answer on a machine-scored response sheet. An example would be the question, "What is the type of climate which prevails in central Australia?" The student looks on the answer sheet of alphabetically arranged possible answers, finds that in the "D" section the term "desert" is number 121 and enters the number "121" on the machine-scored response sheet. Questions can be asked which require not only recall, but also comprehension, analysis, application, synthesis and even evaluation. The MDT fills the gap between the selection and the supply type of test formats. Selection type tests, such as the matching format and the multiple choice test, provide answers from which the student must select the most suitable response. Supply type tests, such as the fill-in-the-blank format, the short answer and the extended essay, require the student to supply and organize information (vs. select suitable answers from a list). The MDT format eliminates the clues which the selection type of test provides because the list of answers -- up to 1,000 possible -- is too long to provide time and plausible alternatives for guessing. It takes far less time to correct than does the supply type of test (fill-in-the-blank, short answers, essays), and the scoring procedure has a greater degree of reliability than the supply type does. In addition, the construction time for the MDT format is substantially less than that required for the multiple choice format because it eliminates the necessity for conceiving of four or five adequate responses for each question stem. The MDT format can be used for virtually any subject matter, and the actual content of the test is always under the control of the instructor or teacher. The teacher chooses and formulates the questions.

These are the major benefits of the MDT format, but what are its costs? One major cost is that students who are not familiar with the format do not like it. They find it confusing and difficult. As an illustration, Anderson quotes this anecdote (a conversation between two students about the MDT) (p. 3):

Alex: This guy's exams are a real *?#!*!#?!*
Bill: Why? Aren't they multiple choice on computer scored sheets?
Alex: Yeah, but you really have to *know* the answers.
Bill: (pause) Huh?
Alex: You know, on a regular multiple choice exam there are four to five choices right under each question and you're sure one of them is the right answer. If you don't know the answer you can usually elminate a couple of choices and then guess.
Bill: How are his questions different?
Alex: This #!*!?+*! has the questions on a couple pages and then a separate page with an alphabetized list of possible answers. You can't guess or eliminate.
Bill: Sort of like matching.
Alex: No. The list of answers is a lot longer than the list of questions. Every answer has a three digit code number, so he has up to 999 answers. Many couldn't be a reasonable answer, but there are so many you can't narrow it down. You can't eliminate and guess like you can when there are just five choices at a time. It's almost like fill-in-the-blank questions. You really have to be prepared.
Bill: Oh #*$+!
Alex: Yeah, what really bothers me is -- what if it spreads?

Indeed, what if it does spread? Alex's worst fears do come true. Anderson reports in *The MDT Innovation* that he enlisted a large number of his colleagues in a variety of different departments at Illinois State University (enrolments of over 20,000 students) to use the MDT format in their classes over the years from 1982 to1986 so that by the time of publication over 8,000 university students have experienced the MDT format. Its use continues at Illinois State University, and the innovation has spread to other universities in the U.S. It is now being used in some high schools. As students become familiar with the MDT format, Anderson reports, they come to accept it as just another one of the test forms with which they must cope as students. They rank it as being more difficult than other selection type tests (true/ false, matching, multiple choice) and on par with (or not quite as difficult as) supply type tests (i.e. fill-in-the-blank, short answer, extended essay).

As Anderson explains in *The MDT Innovation* , he has not merely developed the MDT format, but he has also developed a companion set of standardized answer sheets (machine readable) and computer software for scoring the answer sheets and analyzing the test results. If the MDT continues to gain acceptance, we can expect to see this testing format used in various standardized tests. Also, in future editions of the standard textbooks on tests and measurements (such as Gronlund's *Measurement and Evaluation in Teaching*), we can expect to see a discussion of the MDT included as another member of the selection type tests. It is reasonable to expect it to become one of the topics for study in the curriculum for those in preparation for teaching.

From the educological perspective, *The MDT Innovation* is a work in praxiological educology. It is a how-to-do-it book for using the MDT format. The topics which it treats include the origins of the MDT method, pioneering experiences with the MDT, MDT computer hardware and software components, preliminary preparations for giving an MDT test, MDT test generation and question styles, comparative research on test formats and cognitive achievement and retention, MDT applications for mastery learning and training, time and financial costs and benefits of the MDT innovation, MDT and higher order learning and the use of MDT in research and development.

The readership who would be interested in *The MDT Innovation* would certainly include university students, teachers in preparation, in-service teachers, school principals and other administrators, lecturers and professors with interests in tests and measurements, mastery learning and measurement of higher order learning. Also researchers and professional test and examination designers (such as the ACER and the State Examination Boards in Australia, the ETS in the U.S. and the Examination Boards of East and West Africa) would have an interest in becoming familiar with and developing appraisals of the MDT technique.

Editors

The Economics of Inequality in Education.

Jandhyala B.G. Tilak. New Delhi, Beverly Hills, Newbury Park, London: Sage Publications, 1987. Pp. 197. £19.00 (Stirling), hardback.

The Economics of Inequality examines the economic benefits derived from education by different groups within Indian society. It focuses specifically upon the West Godavari District of the State of Andhra Pradesh in India for its evidence. It addresses three propositions: (1) that different groups within society derive differential economic benefits from education; (2) that human capital formation is unevenly distributed; and (3) that women and the lower castes (the economically "weaker sections" of the population) are subject to labour market discrimination in employment and wages. The method it uses to bring some resolution to these three hypotheses is analysis of the results of a survey made of some 400 randomly selected households and some 1,000 individuals within those households. Primary data from the survey included information about education, occupation, gender, age and income. Secondary data included information from government documents about expenditures on education, rate of economic growth and employment rates. The "internal rate of return method" was used to calculate economic gains brought to individuals through education. The conclusions include the observation that while the economically "weaker sections" of the population (women and lower castes) accrued higher rates of return for education, they suffered within the economy from inequitiable distribution of human capital formation and from economic injustice in hiring practices and wages. The recommendations of the study include the policy of favouring a greater proportion of investment in education for the economically "weaker sections" -- women and the lower castes -- on the grounds of economic equity and efficiency.

This is a carefully argued and well documented study. The argument within it is organized into seven sections: an analysis of the regional inequality in educational development in India, the characteristics of the sample survey, the economic returns to education in India, the "internal rate of return" as a method of economic analysis, the inequality in the distribution of human capital formation and the economics of discrimination in the labour market. A concluding chapter gives a succinct summary of the argument and a set of well-founded conclusions.

From the educological perspective, this is clearly a work in the economics of education, not the educology of economics. The questions which are addressed are ones about how to use education to influence economic activity and income distribution. These are patently economic issues. Educological questions would be ones about how economic activity and income distribution influence the educational process.

The readership which will most likely be interested in this work will be those who have a concern with (1) policy strategies for economic development, (2) the use of education in human capital formulation and (3) rates of economic return, individually and collectively, from investment in educational services. To them, this book can be recommended as highly informative reading.

Editors

International Journal of Educology, 1988, Vol 2, No 2

Academic Work and Educational Excellence: Raising Student Productivity. **Edited by Tommy M. Tomlinson and Herbert J. Walberg. Berkeley, California: McCutchan Publishing Company, 1986. Pp. x, 307. $25.75 (U.S. currency), hardback. $23.25 in purchases of at least 10 copies.**

Academic Work is one of the by-products of *A Nation at Risk: The Imperative for Educational Reform* (1983). When the National Commission on Excellence in Education in the U.S.A. undertook to develop its report on the state of American schools, colleges and universities, it solicited a number of papers (around 40) which provided the Commission with background material for it to prepare its final report, *A Nation at Risk*. Tomlinson, who was a staff member with the Commission, and Walberg, a professor of education (i.e. of educology) at the University of Chicago, subsequently were invited by the National Society for the Study of Education (NSSE) (headquartered at the University of Chicago) to make a selection from the original 40 papers for publication in *Academic Work* as part of the NSSE Series on Contemporary Educational Issues. *Academic Work* extends and elaborates upon the major theme in *A Nation at Risk*, *viz.* that

> excellence is important for the future of our nation [the U.S.A.], and that educators and students must work more effortfully [sic] and intelligently to achieve greater academic productivity. [*Academic Work*, p. ix]

The 11 contributors (in addition to the editors) to the 12 chapters of the book are mainly professors of education (i.e. of educology) affiliated with colleges and universities spread over the American continent, e.g. Herbert Zimiles, Bank Street College of Education (New York City), C. Robert Pace, University of California (Los Angeles), Joseph Adelson, University of Michigan, Thomas Good, University of Missouri (Columbia).

In *Academic Work*, three broad topics are addressed: (1) the social context of American educational institutions; (2) life in American schools, colleges and universities; and (3) academic work in American educational institutions. In relation to the social context, it is argued that American society of the 1960s and 70s exerted various pressures upon American schools, colleges and universities to assure success in learning by all students. The courses of action taken within the schools and other educational institutions to resolve the pressures were (1) a "dilution" of the content and subject matter offered in schools, (2) a reduction in the rigour of academic standards and (3) "grade inflation" -- assignment of unjustifiably high marks to learning achievements of low standard. The quality and the amount of learning achieved by students within schools consequently declined, as evidenced by comparatively lower scores nation-wide on standardized achievement tests in reading comprehension, mathematics and various other subject matter. The solution which is prescribed for this state of affairs by the editors of *Academic Work* (and by the Commission which produced *A Nation at Risk*) is more homework, less wasted time in class (increased quality of instruction, supervision and study) and more family support for "academic study."

Within the book, "academic work", "academic study" and "academic subjects" are key concepts. Yet they are allowed to go largely undefined, even though the concept of "academic" is a major unifying theme of the book and even though there are several chapters which use the concept as their basis for argument. Still, the context of the use of the concepts indicates the meanings which the authors and editors have in mind. For "academic subjects," they appear to mean, firstly, mathematics and the physical sciences, and secondarily, the social sciences, English and foreign languages. For "academic work" and "academic study," they appear to mean the activity of undertaking to learn the "academic subjects," both under the guidance of a teacher and without guidance, independently. To stipulate these meanings for "academic" necessarily leads to the prescription that the worthwhile subject matter in schools consists of these subjects. The question of why "academic subjects" are better than "non-academic subjects" remains unresolved in *Academic Work* . In *Academic Work* , the editors and authors seem to assume the proposition to be true without argument that "academic subjects" are better than "nonacademic subjects." Their arguments are aimed at (1) substantiating the case that students in the 1980s are not as knowledgeable in "academic subjects" as they were a generation ago, (2) explaining how this state of affairs came to be and (3) prescribing courses of action to enable students to become expert in "academic subjects." Not to have explicated clearly the difference between "academic subjects" and "nonacademic subjects" and not to have offered sound evaluative arguments to justify the superiority of the "academic subjects" are two major failings of *Academic Work* .

It would not take an examination of scores on standardized reading and mathematics tests or other ability tests to determine whether America is a nation at risk. Better indicators would be an examination of who the nation chooses as its cultural and political heroes and the way in which it treats its aged, sick and poor -- the vulnerable within the society. It is a nation, for example, in which barely 40 percent of the population honours its obligations to vote in presidential elections. An even smaller turn-out occurs for the state and local elections. It is a nation in which its current President is, by the admission of his own advisers, one of the most ignorant in the world and one who blandly dismisses hard and irrefutable facts if they do not coincide with his preconceptions and prejudices. It is a nation in which cultural heroes (rock stars, movie stars, sporting personalities) by their own admission commonly and frequently consult horoscopes, numerologists and fortune tellers to make serious, consequential decisions. It is a nation in which there are tens of thousands of homeless in each and every major city and in which some privileged few are permitted to accumulate so much wealth that they may indulge themselves to the extent that they have 4 or 5 or even more mansions, which they occupy as their moods and whimsies move them. It is a nation in which entrepreneurial medicine has been allowed to run riot under the sacrosanct slogan of "doctor-patient relationship" to the extent that patients are turned away from preventative treatment and even necessary life-saving care when it is found that they are not covered by private medical insurance. Even with private insurance, the individual is expected to liquidate all assets to meet exhorbitant medical and hospital bills. It is a nation in which it is preached that all people have the obligation to work, while at the same time the economic policies at the federal, state and local levels deny the right of individuals to employment, or if employed, the right to work for a fair wage. It is a nation which publicly abhors drug abuse while its private economy (and on occasion even its public economy) fuels the drug traffic from Latin America and Asia into the U.S.A. Indeed, such a nation is at risk, but not for the reasons which are cited in *A Nation at Risk* nor in *Academic Work* .

The "Five New Basics" cited in both *A Nation at Risk* and *Academic Work* for high schools (i.e. four-year secondary schools) are (1) four years of English studies, (2) three years of mathematics, (3) three years of physical sciences, (4) three years of social sciences and (5) one-half year of computer science (*Academic Work* , p. 17). Nowhere in these five new basics (what is new about them, by the way?) is there anything mentioned about helping students learn to resolve conflict by rational, nonviolent means (a curiosity for a nation which leads the world in deaths by handguns -- mostly manslaughters and murders). Nowhere in these new basics is there mention of enabling students to know how to live as honest and decent people, well versed in knowledge of their rights and obligations and strongly committed to social, economic and political justice. Nowhere in these new basics is there mention of enabling students to develop a sense of self-worth and self-pride which would stand them in good stead to deny themselves the temptation to indulge in self-abuse (such as that of alcohol addiction, nicotine addiction and addiction to other dangerous drugs). These, surely, would be some of "the basics," but they become lost in the talk about the primacy of mathematics and physical sciences.

From an educological perspective, parts of *Academic Work* are educology. Within the work, there is some educology of society, some educology of politics, some educology of learning, some educology of curriculum and some educology of teaching. There are other parts of *Academic Work* which are not educology at all. Rather, they are political tracts about how American educational institutions need to be reformed so as to enhance the economic capacity of the U.S.A. to compete with Japan and other nations which excel in economic production and marketing. An excellent companion piece to read with *Academic Work* is Bill Hannan's *Democratic Curriculum* (Sydney: George Allen and

Unwin, 1985). Hannan's essays provide a conceptual framework for interpreting *Academic Work* and *A Nation at Risk* for what they are and for placing them within the spectrum of various views about curriculum. Hannan's work should, therefore, be read prior to *Academic Work* and *A Nation at Risk*.

Editors

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about the Educational Process
from an Educological Perspective

1989, Volume 3, Number 1

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning process, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counseling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative), empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding towards several ends, e.g. towards heightened sensitivity for educational situations, effective participation within educational situations, the articulation of sound theory about educational situations and resolution of problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counseling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical; experimental and non-experimental; historical and philosophical; jurisprudential; interpretive, critical and evaluative; scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are published. Contributers seeking publication of manuscripts should submit an abstract (100-200 words) and four copies of the manuscript. If the manuscript is available on a 3 and one half inch disc for Apple MacIntosh (Macwrite), please send a copy of the disc as well. Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 in) paper with uniform margins (3 cm or 1 in, both sides, top and bottom). To ensure anonymity in the reviewing process, the author's name should appear only on a separate title page. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on the first page. The length of manuscript should range between 5,000 to 15,000 words. The bibliography should be arranged in this form: Author (date): Title. Place: Publisher. Referencing in the text should be in this form: (Author, date: pages). Footnotes of explanatory text should be placed at the end of the text, but before the bibliography. Diagrams and charts should be camera ready for printing on offset.

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions. The educological perspective in discourse treats the educational process as the dependent variable or as the central concern of the problem being addressed in the discourse. The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic, empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions. The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process.

For authors seeking further guidance as to what constitutes educology and the educological perspective, two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C.: University Press of America, 1981) and in "Education, Educology and Educological Discourse: Theory and Structure for Education and Constructive Action in Education" (J.E. Christensen, *International Journal of Educology*, 1:1 (1987), 1-32).

Manuscripts, editorial correspondence and inquiries about submissions should be sent to: The Editors, *The International Journal of Educology*, Educology Research Associates, Box 383 GPO, Sydney, NSW 2001, Australia.

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International Journal of Educology, 1989, Vol 3, No 1

Editorial

Educology and the Educological Perspective

Recently we received the following letter re educology and the educological perspective:

> Dear Editors --
>
> I certainly agree that it is important to examine the educational process as a dependent variable. I am not sure however about your assumption that disciplines such as sociology, anthropology, etc. treat education primarily as an independent variable. As a sociolinguist I am as interested (for example) in how culture affects the educational process as I am concerned about the way education affects culture. I also allow many discipline areas to inform me as a literacy educator. When I study children's literacy development, I am interested in how social processes influence literacy and in turn are influenced by it. I also consider how information processing (to borrow from cognitive psychology) influences literacy development and is influenced by it . . . and so on. I am sure that I could cite many examples from other discipline areas. [Name withheld]

The fallacious criticism of educology which is implicit in this letter arises from vague and ambiguous conception of what constitutes a discipline, and it disregards the relationships among fields of phenomena, warranted assertions, rules of evidence and uses of warranted assertions.

Phenomena are entities, existences, occurrences, events or happenings. A tree is a phenomenon. So is a cow. A storm is a phenomenon. So is a political revolution.

Human beings use their language to make sense of phenomena by classifying phenomena into groups or fields of phenomena. Three examples of fields of phenomena are animals, plants and weather. It is patent that animals go on living, eating and reproducing, regardless of what is said or written about them. The animals themselves are one thing. Statements about them are quite another. In contrast to the actual phenomena of animals, there are warranted assertions which can be made about animals. These are statements for which there is necessary and sufficient evidence to warrant the belief that the statements are true.

Warranted assertions are the same as propositional knowledge. Warranted assertions can be written and recorded in various media (print, magnetic tape, magnetic disc). Warranted assertions can also be organised into funds of knowledge in relation to fields of phenomena. For example, zoology is the fund of knowledge (an organised set of warranted assertions) about animals. Botany is the fund of knowledge about plants. Meteorology is the fund of knowledge about weather.

To make warranted assertions about a field of phenomena, one must follow rules of evidence. These rules of evidence constitute the discipline which is requisite for producing sound knowledge claims about a field of phenomena. At least three sets of rules of evidence can be distinguished: analytic, empirical and normative. Analytic rules (or discipline) are used when a statement is judged true or false in relation to its coherency with other statements. Empirical rules (or discipline) are used to affirm or disaffirm a statement on the basis of its correspondency with observable phenomena. Normative rules (or discipline) are used to affirm or disaffirm a statement on the basis of its coherency with a set of values which have been rationally chosen in a well informed and uncoerced manner.

While it is common within English to use the term 'discipline' to name both (1) a fund of knowledge (such as zoology) and (2) the rules of evidence for forming a fund of knowledge (such as analytic, empirical and normative rules of evidence), it is an ambiguous and confusing usage. It can result in one's failure to recognise the critical difference between a warranted assertion and the rules of evidence required to produce a warranted assertion.

In fact, the same rules of evidence (or disciplines) are applicable to making a warranted assertion about any field of phenomena. An empirical assertion, for example, requires observation for collection of necessary and sufficient evidence to warrant the assertion, regardless of whether the assertion is about plants, animals or weather. It is not the discipline (i.e. the rules of evidence) which distinguish zoology from botany and botany from meteorology. Rather it is the field of phenomena which those funds of knowledge describe, explain and characterise which makes the difference. The propositions which constitute a fund of knowledge are arranged in relation to a field of phenomena. This is how the term, 'zoology', for example, is derived: a combination of 'zoo-', meaning animals, and '-logy', meaning knowledge -- the fund of knowledge about animals.

This argument is just as applicable to educology, anthropology and sociology as it is to zoology, botany and meteorology. Educology can not be distinguished from anthropology with respect to the rules of evidence (i.e. discipline) which is requisite or necessary for forming warranted assertions. Rather educology is distinguishable from anthropology in relation to the field of phenomena which the fund of knowledge describes, explains and characterises.

Given these three critical distinctions among fields of phenomena, funds of knowledge and rules of evidence, some sense can now be made of the letter to us. First, the reader writes

> I am not sure . . . about your assumption that disciplines such as sociology, anthropology, etc. treat education primarily as an independent variable.

Anyone who does not clearly distinguish among field of phenomena, funds of knowledge (warranted assertions) and rules of evidence (disciplines) would naturally have an unsureness about how to distinguish sociology and anthropology from each other and from any other fund of knowledge, such as educology. The fault lies not in the funds of knowledge, but in the person's ambiguous conception of them. It is not a defensible argument that the rules of evidence for making an empirical anthropological assertion are somehow different from making an empirical sociological assertion. The difference between the two funds is in the field of phenomena which the discourse characterises. Sociological discourse characterises society (a field) from the point of view of how various circumstances and factors influence society. Anthropological discourse characterises culture (another field) from the viewpoint of how circumstances and processes affect culture. The essential difference between the two funds of knowledge derives, not from the rules of evidence (i.e. discipline), but from that particular field of phenonena which is taken to be the central concern (i.e. the dependent variable) for the discourse.

The reader goes on to write,

> As a sociolinguist I am as interested (for example) in how culture affects the educational process as I am concerned about the way education affects culture.

As an inquiring and curious person, one could have an interest in any fund of knowledge and its related field of phenomena. But in playing the role of a sociolinguist, one necessarily focuses upon the influence which society has upon language. This is what the term 'sociolinguist' implies -- a person who conducts research about the effects of society upon language. Going beyond this focus is to go beyond the sociolinguistic perspective. This is perfectly all right to do, and it is desirable to do so. One perspective can not provide all that a person needs to consider in solving all human problems. But when one considers how culture affects the educational process, one is not acting as a sociolinguist. One is acting as an educologist. Likewise, when one has a concern for the way in which education affects culture, one is not acting as a sociolinguist. One is acting as an anthropologist. One then, can take on many perspectives (e.g. the sociolinguistic, educological and anthropological) in conducting research to produce warranted assertions. In doing so, the person is not playing the role of sociolinguist, alone, but also is playing the roles of educologist and anthropologist. It is quite possible to do this.

Our reader writes further that

> I also allow many discipline areas to inform me as a literacy educator. When I study children's literacy development, I am interested in how social processes influence literacy and in turn are influenced by it. I also consider how information processing (to borrow from cognitive psychology) influences literacy development and is influenced by it . . . and so on. I am sure that I could cite many examples from other discipline areas.

Notice here that the reader shifts, in the first line, from the term 'discipline' to 'discipline area'. This shift is evidence of the ambiguity and equivocation in the reader's language and argumentation. An area is a realm, a domain, a field. The meaning which is straining to be let out in the locution, 'discipline area' is that of fund of knowledge, but it is being conflated with the meaning of field of phenomena and set of rules of evidence (discipline) for making warranted assertions. It would clarify the reader's statement to make a term substitution and change the statement to,

> I also allow many *funds of knowledge* to inform me as a literacy educator.

Now the argument is beginning to make sense, although it seems somewhat peculiar to use the locution, "I also allow." It would make more sense to say,

> I *seek out* [rather than *allow* or *permit*] many funds of knowledge to inform me as a literacy educator.

But the reader is not a literacy educator, for he is employed as a lecturer within a School of Education [Educology], and he has responsibilities to teach teachers-in-preparation how to provide opportunities for children to develop their literacy -- their reading and writing abilities. In short, he is a teacher of the educology of literacy. Thus it would make even better sense for him to say,

> I seek out many funds of knowledge to inform me as a teacher of the educology of literacy.

With such a statement, there is no argument being presented for or against the educological perspective or the identity of educology. As a teacher of any content (i.e. fund of knowledge), it is important to be well read and widely knowledgeable. But to read many books and articles does not jeopardise the logical identity of funds of knowledge, of which those books are members. The reader's use of the contents of a book does not alter the contents of the book, nor does it alter the title of the book, nor the logical identity of the book's contents.

In the reader's claim that

> When I study children's literacy development, I am interested in how social processes influence literacy and in turn are influenced by it. I also consider how information processing (to borrow from cognitive psychology) influences literacy development and is influenced by it . . . and so on. I am sure that I could cite many examples from other discipline areas.

it is unclear in what sense of study, he means -- study under the guidance of someone, as a student, or systematic investigation, as a researcher.

If he means the first, then he is declaring that he, as a student under the guidance of a teacher, has an interest in the educological perspective (". . . I am interested in how social processes influence literacy [development]") and other perspectives as well (". . . [how literacy development] is influenced by [social processes]"). This is only natural, and it is one of the marks of a good student to be curious and to want to read widely in many funds of knowledge. However, this is no argument against the viability of using sound discipline to form warranted educological assertions (i.e. to produce educology, or knowledge about education). Nor is it an argument against the logical possibility of organising warranted assertions into funds of knowledge in relation to a particular field of phenomena, such as sociology in relation to society, anthropology in relation to culture, or psychology in relation to mind.

On the other hand, if the reader means the second sense of study (systematic research), then he is declaring that he, as a researcher, wishes to produce educological, sociological and psychological assertions, and perhaps anthropological and linguistic assertions. It is possible to do all of this work, but to do it well would require extensive preparation. It is a tall order for one person to master these different funds of knowledge well enough to be an expert researcher who is able to produce sound, warranted assertions for, and to contribute significantly to, all of these funds. The ambition to make a research contribution to all of these funds is a worthy one (although not a realistic one for most mortals), but this ambition in no way detracts from the logical identity of educology as the fund of knowledge about the educational process. Nor is this ambition in some way an argument which refutes the claim that funds of knowledge can be (and are commonly) arranged in relation to fields of phenomena.

Educology stands as educology, regardless of which students study it, for what purpose they study it, and regardless of which researchers contribute to it and for what motives they contribute to it. Academic staff (or faculty) within Schools of Education (Educology) need to recognise the truth of these assertions and take account of them in their work as teachers of educology and educological reseachers. In doing so, they will extend their understanding of (1) the rules of evidence (the disciplines) which they use in their research and (2) the fund of knowledge to which they claim expertise. The extension in their understanding in these matters will lead to an enhanced competency in conducting research about, and taking effective action within, the field of phenomena that is education. The overall benefit will be increased expertise in the resolution of problems within the educational process. And in matters educational, more knowledge is always preferable to less.

Editors

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Education, Groupism and Employment in Japan: An Educology of Politics, Economics and Society

Kevin A. Collins
LaTrobe University
Melbourne, Victoria, Australia

ABSTRACT

Japanese industry is internationally recognised and admired for its good management, worker cooperation and productivity. In addition, Japanese industry has derived strength from its special longterm relationships with the Japanese government and with the American government. However, even with the privileges bestowed upon it by the Japanese and American governments, Japanese industry could not have succeeded (nor could it continue to sustain its success) without maintaining its reputation for competitiveness and reliability. The essential characteristic which appears to underly good management and harmonious relationships between employer and employee (and indeed which appears to be basic to Japanese society in general) is the "groupishness" of Japanese society and culture (Dore, 1973). As almost anyone from another culture who has spent some time in Japan can testify, group behaviour seems to characterise virtually every aspect of Japanese life, be it groups of workers going off for drinks or dinner, playing volleyball or baseball at lunch time or the ubiquitous school excursions. The group model of behaviour within Japanese society is manifested extensively. Educational processes (1) play an important role in developing and maintaining the group model and (2) reflect the attitudes and values which Japanese society hold about "groupism." Japanese education reproduces, and is driven by the group model of behaviour.

Introduction

In 1868, Japan reacted to the forced opening of its ports by Western powers by initiating moves which it hoped would lead to rapid modernisation. Fearful of the changes which had been forced on China and other Asian countries, the Japanese leaders felt that the only way to maintain their sovereignty was to gain equality of power as rapidly as possible. To achieve this goal, the nation had to be changed from a semi-feudal society with little in the way of modern technology or industry, to one which could compete on an equal basis with the Western nations in terms of military strength and industrial productivity. The transformation had to be completed as rapidly as possible to forestall any possible extraterritorial aspirations of the more developed countries. Another aspect which had to be considered by the Japanese leaders was the need to accomplish these objectives in such a way as to reduce the social stresses normally associated with modernisation, thus causing as little disruption as possible to the industrial and economic activities being pursued by the government.

The extraordinary extent to which Japan achieved its objectives, the speed with which modernisation was accomplished, and later, the recovery from the devastation of World War Two are known to all. What are still being examined and causing numerous disputes, however, are the means which were used for these achievements. When one reflects on the fact that from 1868 to World War Two Japan's average annual economic growth rate was approximately 3 per cent (among the highest in the world during that period) and that in the decade following the restoration of Japan's economy to pre-war levels (i.e. 1954), total production per capita tripled and manufacturing almost quadrupled, then it is understandable that a great deal of interest has been generated in analysing the causes of these developments.

A variety of explanations have been offered by researchers, businessmen and governmental spokesmen. The majority of these explanations attribute Japan's success to one or other of the following factors: the relationship between government and enterprise the relationship between the U.S.A. and Japan; the relationship between employer and employee; the relationship between the modern and the traditional; and the relationship between the group and the individual. While all of these factors have been judged to contribute to some degree to Japan's industrial success, an examination of the categories suggests that there is one factor which is critical to all others: Japanese "groupism."

The important strength of the relationship between industry and government as characterised by the term "Japan Inc" has been stressed by researchers and disgruntled foreign competitors alike. Kahn presents this view in the following statement:

> The basic driving power [of postwar recovery] was a result of the effective utilization of state power, of state financial organization, of state funding, and of the mobilization of other stateowned or controlled resources. All were used to support private enterprises in whatever ways needed. Even the original privately owned zaibatsu in the nineteenth century were begun by the government; the government started the business and then sold them at low prices to certain Samurai families. [Kahn, 1971: 80]

One example of the benefits gained by government support quoted by Kahn was the way in which Japanese industry gained American technology at "bargain-basement rates" through the intervention of MITI (the Ministry of International Trade and Investment). Other well known examples of MITI involvement include the "required" formation of a consortium of major companies engaged in the microchip industry to combine research and development talent in an attempt to gain international leadership in the field. But the important point in this example, and others where MITI either allowed inefficient or obsolete industries to go under, or controlled selected industries by allocation of export subsidies, is that the selected companies or enterprises had to be able to survive on their own abilities and organisational procedures. These practices, basically predicated on good management, worker cooperation and productivity, parallel the relationships established prior to the Meiji Restoration, and which now form a "link between the institutions of the Tokugawa period and the groupishness characteristic of workshop organization today" (Dore, 1973: 381). In a similar way it can be shown that the benefits gained through its "privileged" relationship with America would not have been possible if Japanese industry had not been both competitive and reliable -- the result of good management and good relationships between employer and employee.

The characteristic which appears to be common to each of the above relationships, and to be basic to Japanese society in general is the "groupishness" aspect mentioned by Dore. This aspect of Japan is not something new which has recently developed, but, as has been mentioned by Dore and others, is something which has been apparent for centuries. Yoshino put it in the following way:

> Traditional Japan has often been characterized as a collectivity-oriented society. In fact, the individual hardly existed in it as a distinct entity. In every aspect of life, he was tightly bound to a group and had virtually no individual freedom. Indeed, the basic political, economic, and social unit in traditonal Japan was the collectivity rather than the individual. [Yoshino, 1968: 9]

While this stress on the collectivity existed prior to the Tokugawa period in the small, local farming communities, it became more pronounced during that period. The Tokugawa authorities preferred to work with groups, so they introduced procedures to develop further such an orientation as a measure for social control. In more recent times Vogel stated that the more he examined the "Japanese approach to modern organization, the business community, and the bureaucracy," the more he became convinced that character traits such as diligence and thrift had less to do with Japanese success than organisational structures such as the group (Vogel, 1979: ix).

Almost every outsider who has spent some time in Japan has commented upon incidents of group behaviour. Examples commonly include workers going off for drinks or dinner after work, office workers playing volleyball or baseball at lunch time and the ubiquitous school excursion. A set of questions which merits close attention is the nature of the "group" model of Japanese behaviour, the extent to which it pervades the society and the degree to which education is both influenced by and influences Japanese "groupishness."

The Group Model

From the example already given by Yoshino the basic criteria involved in group behaviour, as distinct from individual behaviour, requires that individuals submerge their individuality to further group goals and to satisfy group expectations. While this aspect of group behaviour is generally well know, other characteristics of Japanese group structure are less well known. They are also deserving of attention and analysis.

Nakane, in her analysis of Japanese society, categorises the contrasting modes of social configuration as either *attribute* (relating to one's occupation) or *frame* (referring to a locality, institution, or particular relationship). Seen in the context of a person who has a particular occupation and lives in a specific community, when the occupation orientation is sufficiently strong,

> an effective occupational group is formed which cuts across several villages; . . . there is formed a distinct horizontal stratum which renders proportionally weaker the degree of coherence of the village community. [Nakane, 1970: 24]

Conversely, where the community cohesion is extremely strong, the links between those in occupational groups weaken (Nakane, 1970: 24). The community was always the primary group for Japanese peasants, and the concept of a primary group persists today for the majority of Japanese. While there are many examples of people belonging to more than one group, there is always one major group which has top priority. The others have lesser importance. The Japanese tendency to stress frame rather than attribute can be observed in the following example:

> . . . when a Japanese "faces the outside" (confronts another person) and affixes some position to himself socially he is inclined to give precedence to institution over kind of occupation. Rather than saying "I am a type-setter" or "I am a filing clerk," he is likely to say, "I am from B Publishing Group" or "I belong to S Company." Much depends on context, of course, but where a choice exists he will use the latter form. . . . In group identification, a frame such as a "company" or "association" is of primary importance; the attribute of the individual is a secondary matter [Nakane, 1970: 2]

To a large extent the modern group in Japan is based on the extended family in either the farming, craftsman or merchant concept of the pre-Meiji period. In this context immediate family, relatives, apprentices, and non-family workers were all considered part of "the family," and received food, accommodation, and were responsible to work for, and with, other "family members" for the benefit of all. Currently familialism, welfare services, housing schemes, recreation centres and educational facilities are provided by large companies for its employees and their families (Befu, 1971: 49). Befu describes this concept as ritual kinship because the members display kinship-type behaviour to each other although no actual kinship ties may exist.

Whether one uses Nakane's familialism, Befu's ritual kinship, or Bennet and Ishino's paternalism (Bennet and Ishino, 1963), the characteristics of the group involve hierarchical ranking, exchanging individual ambitions and behaviour for group goals and expectations. It also involves the gaining of security and support through group solidarity, striving for consensus rather than confrontation and disagreement. Respect and deference are given by junior members to senior group members, and senior group members reciprocate with concern and assistance for the juniors. A general effort is made by all in the group to maintain group harmony and to compete with other groups, both within the same institution and outside it.

Although the majority of writers tend to support the thesis of the existence of the group model within Japanese society, Sugimoto and Mouer (1981: 10) argue that an increasing number of scholars are coming to doubt

> whether, in comparison with people in other societies, the Japanese are more group-oriented, place more emphasis on consenus and social harmony, value more deeply group membership or social solidarity, or are more accustomed to "vertical" forms of organisation.

To support this view, they have cited the research relating to unrest and conflict within Japanese society -- from the peasant rebellions in the Tokagawa era, through rural riots and disputes in the Meiji and Taisho periods, to the student protests, and the tensions between the Ministry of Education and the teachers' union in more recent times. However, in presenting these examples of conflict and disharmony, they tended to ignore one of the basic aspects of group behaviour. Harmony and absence of conflict within a group are balanced by competition, rivalry, and sometimes conflict, between groups. The model of Japanese society as put forward by Nakane, Clark and others, is based on the proposition that the society is composed of many groups, and of groups within groups. The thesis of inter-group rivalry, if one accepts the "in-group" vs. "out-group" concept, accounts for the types of conflict between groups cited by Sugimoto and Mouer.

Whether Japanese are *more* group-oriented than people in other societies is possibly debatable, but Dore (1973: 297) in his study on Japanese and British workers, came to the conclusion that the

> Japanese are lesser individualists, are more inclined to submerge their identity in some large group to which they belong, and [are] more likely to be obsessed by a sense of duty,

while the British tend to be more selfish, irresponsible and concerned with their personal rights and benefits. A recent study of American companies by Peters and Waterman (1982) found that in some companies, group activities did occur, but the carryover of group behaviour into the social life of the working group members certainly did not happen to the same extent or intensity as that found in Japan.

Although only a sampling of opinions and research related to "groupism" in Japan has been presented here, the vast majority of scholars of both Japanese and non-Japanese origin tend to support the view that the Japanese *are* more group-oriented, and that the nature of the Japanese group is unique. Groups in other societies are usually based on attribute. That is, they are based on shared skills and beliefs (such as trade unions, religions and castes), and they are dependent on the principles or concepts which underlie them. In contrast, Japanese groups are normally based on frame or location (i.e. X Company, Y University). They depend on human and emotional contact to a much greater degree than do non-Japanese groups.

Those scholars who deny the uniqueness of Japanese "groupism" have pointed out quite validly that conflict has existed, and still exists within Japanese society. But, this can in large part be answered by the "in-group" vs. "out-group" concept. The "in-group" is a generally recognised aspect of Japanese society.

Another view which is sometimes put forward is that "groupism" or the "group model" is an ideology propagated by the Japanese elite to (a) control and mould the Japanese people through creating an "image of stability, harmony and consensus" (Sugimoto and Mouer, 1981: 16) in much the same way as described by Dore, and (b) to present a picture of Japanese society to their trading partners in an attempt to justify their policies and practices in industrial trade and marketing.

This is a more difficult charge to answer as the Japanese

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Foreign Ministry has subsidised the translation and distribution of books, such as Nakane's, throughout Asian, European and American countries. It is possible to suggest, however, that while the Japanese elite do sponsor and encourage "groupism" for their own ends, this only reinforces the instinctive and emotional behaviour of the Japanese, who still hold very strongly to family or tribal values.

Why does this emotional relationship, familialism or ritual kinship system develop to the extent that it does in Japan? Clark (1978: 4) would say that people "instinctively identify" with the company or group where they work simply because of the fact that they work there. Woronoff (1982: 38) suggests that it is because the company selects only those applicants which it judges "can be moulded later to fit the company's needs." The emphasis is placed on the type of person wanted rather than on the person's abilities. Among the most desired characteristics are loyalty and harmony, and reminders of these characteristics appear in slogans and mottos. Company executives constantly refer to them in their speeches. Since most Japanese are more concerned with the prestige of the company they join than the actual position which they gain in such a company, they are "willing to alter or hide their true feelings and adopt the outer shell their employer wants" (Woronoff, 1982: 38) in order to be selected and retained by the company. Gradually, over the years the employee becomes part of a growing circle of company employees all of whom adapt their personal styles through interaction at work, at the company canteen, at a nearby bar, having dinner together after work, or through living in company housing.

While in Japan in 1979, the author interviewed companies such as Matsushita Electric (Pioneer, National, etc.), Sony, Toyota, N.E.C., Kawasaki Heavy Industries and K.K.K. Steel. He was told in response to a question concerning selection criteria, that a major proportion of the fairly extensive tests and interviews each applicant underwent was to determine whether she or he had the "correct" attitudes and behaviour to fit into the company. No matter how bright, or how good one's reports or results, if it was judged that the candidate was too individualistic and independent then she or he would be passed over in favour of an applicant who demonstrated cooperative attitudes, group-oriented behaviour and diligence. Similar questions were asked of a variety of companies in 1987. They elicited slightly different responses. Some employers commented on the need for workers with more individualism and creativity. Further questioning, however, revealed that while they judged that more individualism and creativity might be needed, the company would still be seeking the vast majority of their employees from among those demonstrating group centred goals and values. When pressed for the reasons behind such an approach, it was explained that the majority of employees would still be required to carry out the day-to-day duties which were necessary, repetitive and boring. Individualism and creativity were not judged to be the most desirable characteristics for people involved in these activities.

Various authors, such as Yoshino and Levine, emphasise the vertical structure which forms such a basic part of Japanese social and work life. Levine states that a "horizontal amalgamation of workers ran counter to traditions of vertical loyalities stemming from the age-old consanguinal family system and feudal relationships" (Levine, 1958: 18). Yoshino discusses not only the vertical relationships within each group, but also the fact that a large corporation is composed of vertically linked "layers" of such groups (Yoshino, 1968: 204) and that this linkage is replicated between companies and sub-contractors and between large enterprises and small to medium sized firms. An example of the vertical relationships within a company can be seen in the "ringi" system of decision making. A new idea, plan or suggestion is first discussed in the group from whence it came. Then it is sent laterally and vertically until all groups, sections and departments likely to be affected by it have had the opportuity to discuss the proposal. At this stage, group members are engaged in such activities as discussion and negotiation and later on, if approval is given, with demonstrating their initiative in the planning for implementation of the proposal.

Following this pattern to its logical conclusion, it should be possible to postulate that Japan is composed of networks of vertically linked groups displaying characteristics of group loyalties: fierce competition between the "we-groups" and the "outsider groups;" subordination of personal goals, expectations and working styles to the corresponding group norms; close human contact and relationships which spill over from the working environment into the members' social lives; and decisions being arrived at by consensus and discussions involving all members of the group. This in fact is what is most frequently observed and commented upon by nonJapanese. They also remark upon the strengths and weaknesses inherent in such a system and the bias which favours males in the employment system (although women are becoming more involved in recent times). With the work group being the primary group for so many, it is obvious that groups based on social linkages, or religion (which normally has quite weak affiliations except for groups such as the *Sokka Gokkai* movement), sporting groups, and to a large extent the family, are far less vital, dominating, and obvious, and play a much smaller role in Japanese society. The question remaining to be answered is why have the groups in the working environment become so dominant.

The Role of Schools and Employers in Group Development and Maintenance

From the points raised in the foregoing discussion, it would appear that while the group approach was probably a natural development in small rural areas of Japan in the early and feudal periods, and may still be a natural outgrowth of the instinctive, emotional nature of the Japanese, there have been very deliberate attempts throughout Japan's history up to the present time to encourage and reinforce such a development, particularly through various forms of education. Dore certainly suggests such a situation when he described the creation of a work-gang system in 1882, which involved the educative process of creating a role model and reinforcing the adoption of similar behaviour patterns among group members.

> From five to fifteen workers were grouped to relatively permanent work groups under a foreman leader who was "to be himself a model of correct behaviour, to guide and exhort the members of his group in accordance with the orders of his superior, to make sure that they obey the regulations, to admonish them when they are in error, and to unite them in earnest industrial endeavour." . . . What is clear is its roots in Japanese culture -- in the moralism of the passage quoted, and

> in another of the twenty-one articles of the work-group rules which stated "any shirking, misconduct or breaking of the regulations by any member of the group shall be considered the responsibiility not only of the individual concerned, but of the group as a whole." Here was a creative application to industry of an old method of political control long familiar in China and Japan and institutionalized in seventeenth-century Japan Here, then, is a link between the institutions of the Tokugawa period and the "groupishness" characteristic of workshop organization today. [Dore, 1973: 381]

In this example, Dore presents us with a case where the workers are "educated" or trained in the ways of group responsibility and cohesion. A similar statement could be made about the mutual responsibility of work groups today, but to a large extent it would not be necessary to set out similar guidelines since these expectations are now accepted as normal. Such a situation is an indication of the effectiveness of this aspect of the educative or training process. The stress at the present time is placed on the Japanese manager to cultivate harmony and solidarity within his group, or as stated by Pascale and Athos (1981: 126) the "group's harmony, and spirit are the main concern." As the work group is the basic building block of Japanese organisations, then it can be projected further to claim that Japanese management is basically concerned with maintaining the harmony and spirit of their individual workforces as they compete for a greater proportion of the domestic and export market. Even the *oyabun* or foreman, who has been excluded from the managerial process of decision-making, has as one of his major functions "to reinforce his group's self discipline, already inherently strong as a result of commonly held cultural values, customs, and language" (Levine, 1958: 57).

Reischauer (1965: 135) would appear to support Dore's views, particularly the thesis of political control of the population. He judged that the Tokugawa regime deliberately promulgated Confucian philosophy, with its concern for correct observance of social relationships in a hierarchically structured society, because it provided the very emotional Japanese with the "external controls they required to form a well-regulated, peaceful society." If one accepts that Japan is a hierarchically structured society, then Japanese management is still engaged in moulding or educating behaviour to ensure that a "well-regulated, peaceful" workforce exists. While much of managements' efforts are directed to group formation, maintenance, and harmony, most companies also provide specific reinforcement through their training programs. Some of the personnel and training officers interviewed during 1979 and 1983 admitted that the technical and informational content of the short courses might sometimes be fairly small, but that a major objective was to restimulate selected workers who would then, it was hoped, help to stimulate their work groups. Research conducted with Year 11 students in Japan in 1987 revealed that they were clearly aware of the importance employers placed on group oriented behaviour in prospective employees. Despite the catch words currently being voiced by some employers, such as "creativity" and "imaginative," companies and school graduates alike are fully aware that the vast majority of graduates selected for employment will have had to demonstrate their ability and willingness to work cooperatively within a group while at school. As an examination of the school curriculum for each level of schooling, the course content for each subject, and the subject guides for teachers of each subject readily indicates, the Japanese Ministry of Education rarely substitutes possible developments for thorough detailed planning. It is clear that schools are actively involved in ensuring that the clearly expressed needs or demands of employers are translated into activities which will produce desirable attitudes. Another way of putting this is that schools play an integral part in the development of group behaviour.

A study of Kyoto schools by Cummings revealed many interesting features, including the manner in which group behaviour and activities were encouraged, and the way in which utilisation of the group situation was incorporated by teachers to stimulate, draw-out, or control class members.

> Order in the Japanese classroom includes greeting the teacher each morning, standing beside one's desk when speaking, listening to others and the teacher in silence, and cooperating in group activities. [Cummings, 1980: 109]

A little further on he states that the classroom order is "also developed by having students cooperate in groups that prepare contributions for the rest of the class." Yet again he comments on the approach of a teacher to persuade children in primary school to share their ideas by leaning "heavily on the classroom group to draw out the problem students" (Cummings, 1980: 109). While this situation suggests that less overt pressure is being applied in classrooms than discussed in the example of the work group described by Dore, an obvious similarity exists. Depending on one's view of education as a philosophy and as a process of development, it is possible that many would agree with the use of group pressure to "encourage" those students who are slow or unwilling to participate verbally in certain classroom activities. But the fear of alienating particular students by this approach, rather than by employing an individual appeal and direct encouragement, should make teachers pause and consider the implications of their approach and possible end results. Examples from industry are frequently quoted, describing the way some companies assist their employees to vent their pent-up anger, frustration and aggression through punching, hitting or beating an inanimate surrogate image of a colleague or superior. In many cases, these pent-up emotions are presumed to result from the emphasis on group behaviour (consensus, cooperation, non-competition, submerging of individual goals or ideas to group goals) which is deliberately fostered and encouraged by management. Do such outlets exist in schools where similar behaviour is being deliberately sponsored and developed, or is the much publicised violence in schools an outgrowth of unreleased pressures and emotions?

The prevalence of group centred activity was also described by Cumming (1980: 126). He commented on the "extensive reliance" on various types of subgroups which permeated the school and class organisation. During his observations of teaching situations, he found that teachers usually split their classes into groups of from four to six students sitting in adjacent seats. When engaged in such activities as a science experiment or putting together a collage, these basic groups worked together. Other groups are formed for physical education activities, organising weekly student activities, and carrying out various jobs in the classroom.

> The most frequently used groups are those mentioned first above. These basic groups, which do something together at least twice a day, are kept intact for about two months and then the members are

> reshuffled. The teachers explain that *they* form these groups and rely on them largely to promote a friendly and cooperative feeling among the students.

Vogel (1979: 28) observed the pervasive aspect of this emphasis on group activities in school which resulted in students acquiring the habit of studying in groups. He found that even if students read aloud, they tend to discuss the material with peers. This process of developing group centred behaviour in the students is neither haphazard nor something which is carried out only every once in a while. From the very first day the student is placed in class, or *kumi*, they are introduced into the pervasive process of learning to be a member of a group. Deliberate activities are introduced by the teacher to encourage and emphasise group affiliation and group harmony. Close attachments are fostered between members of the *kumi*, which normally consists of between 40 and 45 children, and between the children and the teacher. In a large proportion of Japanese elementary (primary) schools the bond between children and teacher is increased as the teacher often stays with the same class for two years. Sub-groups or *han* are formed within each *kumi*, and children will sit with this group for weeks and months at a time while they go through the normal learning activities conducted by the teacher. Through the constant reference to, and reliance on, *han* based activities the children are encouraged to develop positive attitudes toward, and skill in participating in the type of behaviour which will be expected of them once they gain employment. Discussions with high school students, company employees and teachers in Japan in 1987 elicited very warm responses, still real and significant for them, of the *han* and *kumi* relations they had experienced while at school.

Okihara (1986: 14) was very positive in his comments on the beneficial effects of particular activities in schools which helped "to enhance self-awareness as a member of a group." Such activities as field trips, for example, made a major contribution in that they placed "emphasis on having a desirable experience that involves the application of rules of group life and public morality." While discussing the role of the *han* with teachers recently, they stated quite clearly that when on school excursions they keep track of student numbers and behaviour through utilising the various *han* within the class, rather than by attempting to supervise and control a class of individuals. The close relationship between this practice and that described earlier by Dore is readily apparent. According to Vogel the extent of the closeness of the ties within school groups is a result partially of the continual interaciton between the students over the period of their schooling, but also as a result of deliberately organised activities.

> Through group projects, group trips, classroom organization, and above all through close-knit activity clubs with membership lasting several years the student is not only allowed to enjoy group life but taught to be sensitive to his peers and to restrain personal egoism. Indeed, student organizations themselves play a major role in advising a student about ways to gain the respect of his peers. This prepares the student for life in a modern organization, where he is expected to develop long-range commitment to work peers and to be considerate of them. [Vogel, 1979: 178]

Even areas of the curriculum such as moral education, ensure the acquisiton of desirable attitudes and behaviour by discussing personal interaction, responsibility to others, the benefits of cooperation and other similar aspects of behaviour selected to be emphasised in the program. Such an approach, of course, is not new in Japanese education. Much has been written about the use of government controlled text books in the areas of moral education, social studies, and even reading, where attempts were made to mould the attitudes and behaviour of Japanese students in line with governmental desires during the period from the early 1900s up to 1945. Similar occurrences have been observed since that time with the long running saga between Ienaga and the Ministry of Education over Ministry requests for deletion of textual material critical of Japanese military behaviour during World War Two (Halliday and McCormack, 1973: 187-9), and the attempts in 1982 and currently, for removal of any reference to Japanese aggression in North China and South Korea during the wartime period.

The critical aspect to be considered here is whether or not the attempt by the Japanese government to manipulate and control the thoughts, feelings and behaviour of the population through controlling the content and process of education in schools, factories and community groups during the 1900-1945 period is similar to the emphasis on group-centred behaviour which has been instituted within Japanese schools and industry in the post-war era. Another point of interest might be whether the emphasis on developing "groupishness" results from a natural desire by teachers to reinforce what they feel to be a traditonal characteristic of the Japanese people which they, and society, feel to be valuable and worth maintaining. Yet again, it might be something they have been trained to do, or told to do by governmental directive. In this regard, Nishio (1979: 65) states that in Japanese society

> there is definitely a feeling that acting differently from others is unwise. There is a just-like-everbody-else way of thinking that makes people try to adapt themselves to others. People feel secure if they are just like everyone else.

This view is used by some writers to explain why so many students stay on to complete senior high school, even when denied access to the academic courses necessary to sit university entrance exams. Watanabe (1979: 79) says much the same thing when commenting on "educational servitude" in Japan. He contends that the major danger facing the Japanese today is "one of an over-zealous drive toward uniformity" and that this drive is supported by educational practice. Hidaka (1985: 151) extends this line of thought when he says that students at all levels have been reduced to passivity. His observations of students have given him "a very strong impression of docility, to the point where at times they even appear quite cowed in spirit." He agrees with Watanabe that, with the exception of the few delinquent youths, the majority are "boundlessly submissive, boundlessly conformist."

Is this, then, an attempt by teachers to create an environment and a teaching process whereby students are quiet, docile, well-behaved and conformist to a society-wide value of diligence and achievement in school? If such a view is entertained, then one might challenge the motives of teachers who follow such a philosophy. Are they imposing or encouraging such a regime for the present and future benefits of their students, or to create a satisfying environment for themselves? Or yet again, are teachers attempting to mould the attitudes and behaviour of students in an attempt to meet the needs and demands of governmental and industrial employers and so ensure that their students have a secure future? In a recent examination of student achievement in Japan, Shimahara (1986: 21) discussed a case in Nagoya where the municipal board of education launched a campaign to encourage schools to mount a sustained effort to develop disciplined student habits. Shimahara quoted from the preface of a camping manual, written by a principal and used by tenth grade students (Year 10 or first year of senior high school in Japan) during an orientation program. The most significant aspect of this preface to Shimahara, was that the principal

> did not mention the fun and excitement associated with camping but, instead, stressed the significance of discipline, hardship, order, and cooperation.

While some of the principal's comments might be similar to those made by principals in other cultures, the degree of emphasis placed on the four characteristics was far greater. It would not be difficult to view the advice from the principal that each student "will also learn the importance of order and cooperation required by the group to which you belong" as a possible warning or guidance for the student in future employment. Were a comparison to be made of the prosperous Japanese industrial economy, characterised as it is by industrial efficiency, productivity, company loyalty, diligence, group centred behaviour and enterprise unionism, with the less prosperous Western economies, one could say that in terms of economic prosperity the emphasis on group behaviour in Japan has paid off. Critics of the Japanese industrial "miracle" would, however, question the human cost of such achievements. Should these critics be correct in their evaluation of the forces and patterns inherent in the manner in which Japan has achieved its industrial productivity and prosperity, through moulding employees to substitute company loyalty for personal identity and growth, then the motives of teachers assisting in shaping the attitudes and behaviour of the youth to fit into such a system must be challenged. This brings us back to the earlier question as to whether Japanese teachers are merely attempting to reinforce an instinctive characteristic, as described by Clark, or trying to prepare their charges most effectively to gain employment, or whether they are compelled to follow such an approach because of governmental directives in the form of compulsory "guidelines" for teachers.

One view expresed by a variety of writers is that the approaches carried out in schools are merely one expression of a general governmental and industrial policy of control. They see this as similar in intent, if somewhat different in detail, to the manipulative practices of the militaristic and nationalistic governments in power in the forty years prior to 1945. The latter used indoctrination through moral education and such other subjects as history and reading, through "thought control," social education and workers groups. In contrast, the current approach in developing a docile population is through such practices as emphasising group goals and values in preference to those of the individual. It stresses consensus and "familial" employment relationship patterns. Dore (1973: 381) certainly perceives a relationhip between the "groupishness" of current workplace organisation and methods of political control utilised as far back as seventeenth century Japan. Sugimoto (Sugimoto and Mouer, 1981: 72) states that "individuals are placed in a work situation conducive to group pressures and 'group policing.'" He describes many ways in which employees are "taught" to conform to a company image. The workplace for white collar employees who "must work under the watchful eyes of their workmates" is in a large, common area, rather than in partitioned work space. Hidaka (1985: 103) judges that the Japanese society today is held together by

> the process of increasing control over our livelihood, control of education, standardization of culture, and passivity of thought, in short the all-pervasive character of the ready-made which holds the whole framework together.

The question of whether teachers might, or might not, desire to participate in shaping the young in their charge to fit into such a regime by encouraging, developing and reinforcing the achievement of "groupishness" loses its significance when it is realised that Japanese teachers must follow a "course of study" prepared by the Ministry as a guide to teachers. McCormack (Halliday and McCormack, 1973: 187) states that the "course of study," initially introduced with the Fundamental Law of Education of 1947, "became binding in 1958." In his view, it has undergone continuous, retrogressive revision ever since. Through demanding that teachers follow governmental guidelines for both content and method, and by controlling textbooks through an official Textbook Certification Commission, it would appear that the Ministry of Education allows teachers to have little say in what happens in schools.

Although the basic goals of education as expressed by the Ministry of Education, and the actual practice of what happens in schools are not necessarily the same, it is interesting to note some comments expressed in the Ministry guidelines (Mombusho, 1972: 3-14) for reform in 1972.

> As men leading a social life, we should establish a variety of human relations and actively participate in social activities. Through these we acquire the consciousness of social solidarity, responsible attitudes and behavioural abilities which enable us to realize not only our own goals but also to aid others in their efforts.
>
> ***Direction of Improvement of School Education***
>
> (b) The improvement of such methods of education as group activities so as to promote the development of sociability, and to create a classroom situation where individual students can be provided with appropriate guidance and counselling.
>
> In addition the classes composed of various types of students must be handled so that the educational function of group life is not impaired.

With these objectives being brought clearly to the attention of teachers throughout Japan, it is not difficult to see how the examples of school group activities mentioned previously by Vogel and others came into being.

When one reviews the varying factors which support group formation it is clear why group behaviour has persisted for so long. The range of factors include the "instinctive" behaviour of the individuals, the familiarity of groupism at work within the family and the community at large, the group activities which permeate school life from kindergarten through to graduation from senior high school and even university, the selection procedures for employment, the reiterated and overt emphasis on group behaviour and harmony presented by employers, and the lifelong education patterns provided by employers. These activities constantly encourage and reinforce acceptance of, and adherence to, group behaviour as a means of gaining personal goals and the satisfaction of contributing to the success of one's company. It is difficult, however, not to ponder on the future of groups and group behaviour if the companies and employers ceased to make so obvious their desire for group-oriented employees, so that only such aspects as Clark's "instinctive" behaviour, and normal family and community values remained to support their continuation. Would schools still place so much stress on fostering group activities if employers no longer wanted those skills and characteristics in their future employees? If Brown (1974: 186) was accurate when he said that

> It is precisely the group-orientation of the members, the cohesion, and the insistence on harmonious personal relations which, I submit, are the strength of Japanese organizations and the source of their efficiency

then it is doubtful that schools or society will want to reorder their expectations in the near future. Despite the catch words "creativity" and "individualism" currently cropping up in conversation and press reports, many Japanese companies have indicated that employers will still seek to attract the vast majority of their future employees from among school graduates proficient in group-oriented behaviour.

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An Educology of Innovation in Teacher Education: A Nigerian Example

A. Babs Fafunwa
Pro-Chancellor, University of Calabar
Calabar, Nigeria

ABSTRACT

Primary education in Nigeria has for a number of years followed the pattern of using a mother tongue (such as Yoruba) as the medium of instruction for the first three years of primary school and English as the medium of the instruction for the last three years of the six year primary school program. Academic staff at the Institute of Education within the University of Ife (Lagos) undertook an innovation to offer primary schooling through the use of a mother tongue (Yoruba) as the medium of instruction for the entire six years of the primary school program. English was studied as a second language, but not used as a medium of instruction. Other innovations were incorporated into the program, including a change in the subjects offered, preparation of curriculum materials through collaboration between classroom teachers and university academic staff and inservice education for classroom teachers in effective ways of using the curriculum materials and productive means of implementing the new curriculum. From the small beginnings of three classroom teachers and 180 pupils, the Six Year Primary Project (SYPP) has grown into a second phase which now includes the participation of 2,100 classroom teachers and 60,000 primary pupils.

Introduction

(a) The Primary School System in Nigeria. Before the introduction of the new National Policy on Education in Nigeria in

1977, the duration of the primary school course in Nigeria varied from State to State. Some were for an eight year duration; some for seven; and some for six. The entry age also varied between five and six years. Consequently, the children who stayed in school till the end of the course completed the primary cycle between the ages of eleven and fourteen. It was decided as far back as 1925 that the medium of instruction in the initial years of the children's education should be in the "vernacular"[1] and that English should be used both as a medium of instruction and as a separate subject to be studied in the last three or four years of the primary education course. Subjects taught under this system included arithmetic, nature study, art and craft, hygiene and sanitation, local geography and history, mother tongue, religious knowledge and English, both as a medium of instruction and as a subject. At the end of that primary education course, the children were subjected to a written examination, called "Primary Six School Leaving Certificate." The test was an examination set in English, and the children had to answer the questions in English. Before children could be certified as successful primary school leavers, they had to pass in the subject of English and a number of other subjects. The children's chances of entering a secondary or trade school or, indeed, for gaining low-level employment, depended largely on their performance in this single achievement test in English.

With the switching of the medium of instruction from the mother tongue after three years to English in the first three years of primary education, the average Nigerian child was neither proficient in the mother tongue nor in English. One of the primary aims of Nigerian education, permanent literacy, was thus defeated.

(b) Teacher Training. The training of primary school teachers has taken place principally at the Grade II teacher training colleges. The period of traning has depended on the qualification of the student. Those with Primary Six School Leaving Certificate have spent five years in training. Those with eight years of schooling (six years of primary school plus two of secondary school) have spent three years. Those with full secondary education have spent one year. The colleges have combined professional training with secondary school subjects.

Ironically these primary school teachers-in-training have not been trained in the use of mother tongues as media for instruction. It has been assumed that exposure to one's mother tongue as an infant has been sufficent to qualify one in appropriate teaching methods to cover all possibilities. In contrast, some effort has been made to guide primary teachers-in-preparation to learn teaching methods appropriate to the teaching of English. Furthermore, a Nigerian language, e.g., Yoruba, Hausa or Ibo, has not been a compulsory subject for primary teachers, but English has always been a mandatory subject. The ability to read, write and speak English has been considered to be the hall-mark of educational excellence. However, because of the limited educational background of most teachers trained in these Grade II colleges, their standard of English has often been low. Like the pupils they have taught, many of these teachers have been neither proficient in Yoruba nor in English. Consequently the children have been exposed to bad models.

Inadequate as the trained Grade II teachers have been, fewer than 45% of all teachers in the primary school system have been Grade II Certificate holders. This makes a complex situation even more confounded. For instance, during the 1977-78 school years, 154,000 teachers out of *300,000* were unqualified to teach, and most of these teachers were unqualified largely because of their inability to handle the English language effectively. But these same unqualified teachers might have performed better in the classroom if they had been trained to teach in the mother tongue. Possibly the children would also have learned better in their own mother tongue.

It was with this idea in mind that the author launched the Six Year Primary Project (SYPP) in Yoruba in 1970 with a group of his colleagues at the University of Ife. The project is now 18 years old.

The Project

The University of Ife's Institute of Education launched a primary education project in January, 1970, and gave it the name, Six Year Primary Project (SYPP). The project integrated an inservice teacher education component with a primary school curriculum development component. It aimed to give support and instruction to inservice teachers so that they would be able to use Yoruba as a medium of instruction for the full six years of their primary school classrooms and to teach English as a second language within the primary school curriculum for the full six years. The project also aimed to compare the effectiveness of this instructional program with the conventional pattern in which the first three years of primary school instruction used the mother tongue as the medium of instruction and the second three years used English as the medium of instruction. The overall objectives of the SYPP were as follows:

(a) To develop a primary education curriculum with a strong surrender value, since primary education is terminal for many Nigerian children.

(b) To develop materials, together with appropriate methodology, for teaching the prepared curriculum effectively.

(c) To use the Yoruba language as the medium of instruction throughout, in order to demonstrate that primary instruction, when given in the child's mother tongue rather than in a second or foreign language, is more effective and meaningful.

(d) To teach the English language effectively as a second language throughout the six years of primary education.

(e) To evaluate the project continually with a view to determining the presence or absence of certain significant differences between the experimental and the control groups.

The project selected five curriculum areas for the experiment: science, mathematics, social and cultural studies, Yoruba (language and literature) and English as a second language. Of the five subject areas, English was the only subject which had fairly good materials already in the field. Even then, extensive modification of the existing materials had to be carried out because the project's goals were different from those of any existing programs for which the materials were written. The other four subject areas presented yet a more formidable problem in that materials had to be designed and constructed practically from scratch through classroom trials and extensive writing workshops not originally anticipated.

The experimental classes used Yoruba as the medium of instruction throughout the full six years of primary school. The pupils were taught English only as a second or foreign language. The control classes used Yoruba as the medium of instruction for the first three years and English as the medium for the last three years of primary school. This was in accordance with the state education policy All of the project classes (experimental and control) used the newly developed curriculum materials designed by the project team. However, the curriculum materials for the experimental classes from Primary I to VI (the full six years of primary school) were in Yoruba, i.e. the curriculum materials for science, mathematics, social and cultural studies and Yoruba language and literature. The control classes used the same materials as the experimental classes for the first three years of primary school, and they used the English language version of the Yoruba materials for the last three years. The project started in January, 1970, in a school with 80 children in the experimental group and 40 in the control group. By 1975, there were 1,560 children involved in the project: 1,080 in the experimental classes and 480 in the control classes, spread over 8 towns in 11 schools located in urban and rural areas. Over 180 titles (mimeographed books), comprising pupils' books, teachers' guides and workbooks, were produced at six consecutive writers' workshops held between 1970 and 1975 at the Institute of Education, University of Ife, Ile-Ife, Nigeria. (See Table 1.)

It should be noted that all the text books in Yoruba, English, social and cultural studies, mathematics and science were written and printed by the project team over a period of six years. Two sets of material for each subject matter area were produced: one in Yoruba and one in English for Primary I through VI (all six years of primary school). The textbooks produced for each subject area and for each year included a teacher's book, a pupil's book, a pupil's work book and several supplementary readers in Yoruba and English. While in the beginning stages (1970 to1975), the project involved 1,560 children, by 1988 it had grown to involve

60,000 children and 2,100 teachers in Primary I, II and III (the first three years of primary school). Growth of the project was greatly boosted by the adoption of the program by the Oyo State Government (a Yoruba speaking state within Nigeria) in 1986. The State Government's action is powerful testimony to the success of the experiment.

Table 1:
Numbers of Instructional Text Materials
Produced for the SYPP

	Science	Maths	Social and Cultural Studies	Yoruba	English	Total
Yoruba	24	19	23	32	--	91
English	7	10	22	--	47	92
Totals	31	29	45	32	47	183

Innovation in Teacher Education

An important aspect of the SYPP has been the innovations which it has effected in Nigerian teacher education programs. As previously described, the standard qualification of Nigerian primary teachers has been the Grade II Certificate, which is granted after one to five years of training at a Grade II teachers college. The duration of the training has depended on the previous educational attainments of the teacher education student. Completion of six years of primary school indicated a five year training course for the student at the Grade II teachers college. A full secondary school qualification indicated a one year training course at teachers college.[2]

(a) Teaching Organisation. The implementation of the SYPP raised certain organisational difficulties for timetabling and for subject offerings within primary schools.

First, the SYPP called for the provision of social and cultural studies, elementary science and new mathematics. This revision implied changes in timetabling and in general administration of the contemporary primary school syllabus as laid down by the State education authorities. Consequently, close collaboration with the headmaster (principal) was required in recruiting teachers and assigning them to experimental and control classes. The general administration of the school, and particularly the formulating of the school timetable, required flexibility. A timetable was needed which could always accommodate the various aspects of the teaching programs of the project.

Second, the changes in the curriculum necessitated the introduction of new approaches to teaching the various school subjects. These new approaches needed to be developed, learned and trialled so as to test their effectiveness. This problem, together with the issue of teacher education in general, was solved by making it compulsory for the teachers to undergo on-the-job training. This was provided by the SYPP as a continuous exercise during the schools terms and during holidays between terms.

(b) Classroom Guidelines for both Experimental and Control Classes. At the beginning of the project in 1970, policies were formulated to serve as guidelines for class organisation in both control and experimental classes. As the project progressed and as the situation called for it, additional policies were formulated in order to ensure the successful running of the project.[3] For the guidelines, it was decided that

(1) teachers in both control and experimental classes should be Grade II Certificated and experienced teachers;
(2) teachers should be allocated to the classes without any bias, in other words, the better teachers should not be assigned to the experimental classes alone; both classes should have an equal balance of experienced and competent teachers;
(3) teachers should show willingness to work hard, accept new approaches to teaching and co-operate with the project organisers;
(4) the teachers should be receptive to change and innovation and should also be well suited to lower primary teaching (for example, a teacher was removed

from the project at the initial stage because of her inability to relate to children);

(5) teachers should be willing to participate in workshops and inservice training programs;

(6) teachers should be capable of making correct and imaginative use of project materials; hence the degree of their contribution by way of feedback on materials used should be considered in determining their retention on the project.

With regard to teaching load and distribution of work, at the beginning of the project in 1970, the project organisers decided on the rescheduling of time on the timetable to allow for integrated teaching and to accommodate the new learning areas. The subjects which therefore appeared on the timetable both before and after rescheduling were as indicated in Table 2.

Table 2:

Difference between Subject Offerings in the Conventional Primary School Timetable and in the SYPP

Old subjects (conventional primary school syllabus)	New subjects (SYPP)
religious knowledge	religious knowledge
physical exercise	physical exercise
arithmetic	mathematics
Yoruba	Yoruba
spelling and dictation writing	English
nature study and gardening	elementary science
arts, crafts, history, geography, singing	social and cultural studies

With the new timetable, each class teacher did some reorganising of her or his workplan and placed an emphasis on integrated learning. Each class teacher was responsible for the teaching of every subject in her or his class, with the exception of English in the experimental classes. This was taught by a specialist teacher of English. The teachers in the experimental classes used the free periods created by the English specialists in a variety of ways.

Sometimes the classroom teacher used the time to study the English specialist teacher's approach to language teaching. Sometimes teachers served as substitute teachers during their free periods when any teacher in the project was unavoidably absent. Sometimes the free periods were used for making additional instructional materials. Generally, this initial pattern remained the regular or conventional one, although as the number of classes, pupils and teacher involved progressively increased, suitable adjustments were made to fit the situation..

With regard to space, materials and physical arrangement in classrooms, like all typical State school accommodation, space was a problem. The classroom furniture was inadequate. Heavy, cumbersome desks and benches made arrangements for group work in lower primary classes inconvenient and difficult. The school classrooms had not been painted for years, and the ceilings were in need of repair. The chalk boards were concrete coated with a black paint. The paint was faded, and the boards were badly chipped. Inspite of these impediments and more, the project teachers tried their best to improve the classroom situation. The project organisers provided adequate materials for both the control and experimental classes so that visual resources could be made -- a class library, the national flag, traditional objects (mats, drums, adire cloth as background for displaying pupils' work). These were major innovations, for this was not a common scenario in Nigerian primary schools.

In the teaching of the subject areas, it was the policy of the SYPP that the medium of instruction would be Yoruba in the expirimental classes from Primary I through VI (the full six years of primary school). English was taught as a second language from Primary I through VI. In the control classes, Yoruba was used as the medium of instruction in all subjects from Primary I through Primary III (the first three years of primary school). Primary IV (the fourth year of primary school) was treated as the transitional stage when the medium of instruction was changed from Yoruba to English, and English was used as the medium of instruction for the remainder of primary school through Primary VI. English was also taught as a second language from Primary I through VI in the control classes.

(d) Recruitment of Teachers. The teachers who were recruited for the primary project were Grade II Teacher Certificate holders in keeping with the national norm for this level. The project organisers recruited the teachers from the school where the SYPP classes for the experimental and control classes were to be located. The recruitment was voluntary. Only those teachers who expressed an interest in the project were asked to appear for interview. Initially most of the teacher who were interviewed felt "insulted" to be asked to teach in Yoruba instead of English. The idea of using Yoruba as the medium of instruction through all six years of primary school was repugnant to these Yoruba speaking teachers! The irony of the situation was that the National Policy on Education was (and still is) that teachers should use the mother tongue as the medium of instruction for the first three years and English for the last three years of primary school. Fortunately for the project, only three teachers were needed for the first year because only three strands of Primary I pupils were admitted yearly -- two experimental, the other, control. From these small beginnings of three teachers and three primary classes the project grew until by the end of the fifth year of the project, 1,560 children and 40 teachers were participating in the SYPP.

(e) In-service Training for Project Teachers. The 40 primary school teachers who participated in the SYPP had a unique in-service training unparalled in the history of Nigerian education. Among the features which distinguished it were the following.

(1) The teachers took an active part in curriculum planning, and the process also involved university teachers and college of education tutors.

(2) The teachers actively participated in the textbook writing sessions of four to six weeks duration every summer between 1970 and 1975.

(3) The teachers were responsible for testing each new text or curriculum material in their respective classrooms, and they had the responsibility for providing feedback on problems and difficulties encountered by the children; the feedback always led to rewriting of text and

materials by the respective panels of which the teachers were members. The classroom teachers were indeed expert advisers to the university cum college of education specialists in the subject matter areas of social and cultural studies, science, mathematics, Yoruba and English.

(4) They attended a series of weekend courses annually in which they studied the use of project materials and textbooks in all five of the teaching areas; their studies considered the appropriate application of the teachers' books, pupils' books, the workbooks and the supplementary readers.

(5) They received on-the-spot advice from the Institute of Education specialist teachers who were always on hand to give guidance, if and when sought by the classroom teachers.

(f) Local Resource Persons. One of the important lessons learnt by the project organisers was the invaluable contribution which could be made by nonliterate people in the rural areas. In contrast with urbanised and educated African language speakers, African rural communities tend to preserve and retain the original language patterns and concepts. (It is not surprising that certain rural communities -- descendent of Africans -- in Brazil and Cuba still retain the original cultural and religious aspects of the Yoruba language.)

At the very inception of the project, the organisers realised the need to consult the old and the wise in the village communiites for words, phrases, concepts and cultural practices not commonly used in urban areas. Teachers, pupils, panel writers and the project organisers made extensive visits and established contact with this group of experts of African traditions. Often times, certain concepts in science or mathematics and social and cultural studies in particular defied the project workers' understanding of how to translate them into Yoruba. In many cases, the rural dwellers were already familiar with such concepts in traditional Yoruba. It therefore became a policy of the project not to coin, substitute or translate a concept until the rural sages had been consulted. As a result of this approach the science, mathematics and social and cultural studies materials were greatly enriched.

The SYPP children were encouraged by their teachers and the project organisers to ask their parents to teach them folklore, stories, songs, proverbs and to explain to them how various festivals are performed. Some examples about which the children inquired and learned included naming ceremonies, marriage ceremonies and funeral rites. Both the project organisers and project teachers committed a selection of the folklore, stories, songs, proverbs and ceremonies to writing, and they recorded many more on tape. Nonliterate musicians, drummers, singers and story tellers were brought into the classroom to teach the children.

It was the first time in the history of modern education in Nigeria and probably in Africa that nonliterate parents and guardians were made to feel that they too had something important to teach university lecturers, classroom teachers and their own children. Prior to this time, there was hardly any communication between the school children and their nonliteraterate parents and guardians because of language differences. The convention had been that English was for school, and the mother tongue was for nonschool activities. With the SYPP, therefore, the home, the school and the environment spoke the same language.

Latest Developments and Unresolved Issues

Early in 1985, one of the Yoruba speaking states (Oyo State) adopted the SYPP on a trial basis. It invited the Institute of Education, University of Ife, where the project was based, to train 700 teachers who would serve Primary I classes comprising 20,000 children from January, 1986. Another 700 teachers were trained for the 1987 Primary I class. Today, 60,000 children and 2,100 teachers are involved in the SYPP.

One of the most rewarding aspects of the SYPP has been that 35 out of the original 40 teachers trained for the original project accepted the responsibility for the trianing of the 2,100 primary school teachers who are now teaching 60,000 pupils. These original teachers (some of whom have retired) are now serving as specialists under the new SYPP -- the Six Year Primary Project II. They are likely to continue in this capacity as the Oyo State School System expands its intake of pupils over the next three years (1988-91).

While great progress was achieved through SYPP I, and while SYPP II promises even greater improvements, an unresolved issue in not only Nigerian, but subSaharan African education is the existence of large classes of 60 to 80 pupils at the primary level. These seem to have become a permanent feature of African primary schools, and there is a need to develop innovations in teaching practices which can cope effectively with such large classes. Some possibilities of ways of coping with large class sizes include team teaching, use of audiovisual materials, a team of one trained teacher and two untrained teachers per class of 100 pupils, the use of a master teacher and an inexpensive television (not costing more than100 U.S. dollars) with wide screen and operated by solar energy or battery. The author has been seeking innovative ideas from those who have tackled this problem successfully, and he should be grateful to hear from teachers, researchers and others who share an interest in such problems and have constructive suggestions to offer.

Footnotes

1. *Vernacular* is a derogative term for 'mother-tongue' languages such as Yoruba, Ibo and Hausa, spoken by 12 million, 10 million and 30 million people respectively.
2. As of 1988, all teacher training colleges only accept students with 3 to 5 years of post-primary education.
3. A.B. Fafunwa et al. (Eds.), *Six Year Primary Project Report No. II*, 1973, pp 6-7

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Perceptions by Secondary School Principals of the Purpose and Effects of a Staff Development Program for Teachers: An Educology of Educational Administration

Nicholas DeFigio and Sean Hughes
University of Pittsburgh
Pittsburgh, Pennsylvania, USA

ABSTRACT

The central purpose of this research was to identify and categorise the perceptions of 12 secondary school principals in a large urban school district of an inservice education program designed for their teachers. The research aimed to determine which philosophical and theoretical position each principal held and how that position influenced his expectations (all principals were male) for the program. Data were collected from the 12 principals through structured individual interviews. The questions were designed to elicit responses which reflected judgements about the staff development program which only some of the principals had helped to plan. There were many expectations held by principals for the program, and principals shared very few expectations. All principals had expectations of improved instruction, which was a formal goal of the inservice program. In their statements of expectations, principals seldom referred to two additional goals of the program, viz. updating of teachers in content areas and developing their understanding of the complexities of adolescent culture. The 12 principals held expectations about the program which were distributed over several philosophical positions, including scientific management, human relations, organisation development and integration. These data underscore that principals viewed effectiveness from very different perspectives, that their expectations were personal

and that their expectations were often unrelated to the intended goals of the inservice teacher education centre

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Introduction

Because one characteristic of an effective school is a schoolwide inservice staff development program which involves the entire professional staff and relates to the instructional program of the school (Purkey and Smith, 1983), increasingly school districts in the USA are establishing inservice programs for teachers. (School districts in the USA are typically organised around a single municipality, rather than in a statewide system, as in Australia, or nationally, as in France.) The programs are designed to bring about certain changes in the teachers and the school. The role taken by the principal of the school has a profound effect on the outcome of such inservice programs. The principal is charged with the task of managing the expected changes. The principal's perception of the program often determines how it is received and implemented by teachers. The school principal is a key figure in the improvement effort (see Barth, 1982; Cohn and Rossmiller, 1987; Debevoise, 1984; Featherstone, 1986; Mangieri and Arnn, 1985; Persell and Crookson, 1982; Rodriguez and Johnstone, 1986; Sweeney, 1982).

Yet, too often, principals are not a part of the planning of inservice programs for teachers. Because of this, expectations which principals hold for the inservice program may, in fact, be contrary to the stated goals of the program. The central purpose of this research was to explore the perceptions of 12 secondary school principals in a large urban school district of an inservice program designed for their teachers, and to determine which philosophical and theoretical position (school of thought) each principal held and how that position influenced his expectations for the program.

Methods

This investigation took place in a large urban school district of 42,000 students, 14,000 of whom attend 11 comprehensive high schools and one special high school, grades 9 through 12 (the 10th through 13th years of schooling). The subjects of the study were 12 secondary school building principals (all male) with a wide range of experience (5 to more than 21 years) who had already undergone a district operated program of training to become instructional leaders. In addition, these principals worked with experienced teachers (10 to 35 years of service) who had been involved in an intensive staff development program during the preceding two years.

After the principals had received training in instructional skills, the superintendent (the chief executive officer of the school district) presented a plan for inservice education of secondary school teachers. The plan called for the creation of a Teacher Centre located in an operating secondary school. All secondary school teachers over a 4 year period would be required to attend this Centre for an 8 week staff development program. Before opening the Teacher Centre, the district collected needs assessment responses from 805 secondary school teachers to determine individual and group needs. The needs assessment results (see Figure 1) were used by the planners to guide the development of renewal activities for teachers attending the Centre.

> The 8 week fulltime Teacher Centre experience focused on three broad areas: (1) instructional skill development; (2) teachers' understanding the complexities of adolescent culture; and (3) review of and update in each teacher's content area. [Wallace, Young, Johnston, LeMaieu and Bickel, 1984]

The visiting teachers participated in inservice workshops on instructional practices and research based seminars. The workshops and seminars focused upon psychological, emotional or physical development of adolescents and the impact which those factors may have upon students' learning (Wallace et al., 1984). The workshops and seminars also re-examined the school district's entire curriculum, and they explored the articulation of subjects both across grade levels and with other subjects in the curriculum (Wallace et al., 1984). In addition, each teacher was

Area	Topic
Instructional Skills	Recent developments in research on teaching and learning
	Teaching study skills
	Instructing students with special needs (in mainstream classes)
	Technological update (educational hardware and software, etc.)
	Motivational theory and techniques
Content Area	Knowledge of subject area
	Recent curricular developments in subject area
	Innovations in field of study
	Application of subject area to world of work
	Review of appropriate supplemental and enrichment materials
Classroom/Student Management	Classroom discipline and control
	Options for enforcement of rules and regulations for students
	Approaches to dealing with difficult students
	Dealing with absenteeism
	Preventing students from dropping out
Human relations	Teacher burnout and stress management
	Recent psychological findings on adolescent development
	Cooperative problem solving between teachers and administrators
	Sharing the responsibility for the educational enterprise
Technical and Routine Management	Facilitating recordkeeping for students
	Judicial decisions and legislation affecting educational practices
	School district management (administrator's viewpoint)
	Efficient handling of routine management duties

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* Topics are based on a survey of 805 secondary teachers. The topics are those which are common to all subject areas -- separate analyes were carried out by content area as well.

Figure 1:
Secondary Teachers' Perceptions of Needs Relevant to Professional Development

required to teach while being supervised by colleagues.

Participating teachers (designated as Visiting Teachers) were released to participate in the program by a substitute (designated as a Replacement Teacher). The Replacement Teachers were certified in the areas which they taught, and they were fulltime teachers with considerable tenure in the school district (Wallace et al., 1984).

In preparation for attending the Centre, the Visiting Teacher and her or his principal were instructed to develop an Individual Study Plan (ISP). The plan was to be based on needs as determined by the teacher and the principal. During the eight week period at the Teacher Centre, Visiting Teachers were provided opportunities to work on their ISP by the Teacher Centre administration and the highly qualified teaching staff. The latter were designated as Clinical Resident Teachers. They had the dual role of teaching the students at the high school in which the Teaching Centre was located and of working with the Visiting Teachers.

Prior to the completion of the eight weeks at the Centre, the Visiting Teachers developed a Follow Through Plan (FTP), with the help of the Teacher Centre administration, the Clinical Resident Teacher and the principal at the Visiting Teacher's home school. This FTP was designed to foster "continued development of the newly acquired or refined skills" (Wallace et al., 1984), and it allocated responsibility to the principal and the teacher for the maintenance of the Teacher Centre objectives.

Instrumentation

Data were collected from the 12 principals through structured individual interviews. The questions were designed to elicit responses which reflected judgements about the staff development program which only some of the principals had helped to plan. Before developing the interview protocol, the authors familiarised themselves with the goals, objectives and methods used in the staff development program. In addition, discussions were held with the leaders and planners of the program to determine congruency with what was written and what was actually carried out.

The interview was organised around four sets of questions:

(1) what principals expected to happen as a result of the staff development program;

(2) what administrative problems were created and how much of their time was diverted from their usual duties to make the program work;

(3) how much support did they receive to help make the program a success; and

(4) what happened which was unexpected.

Procedures

A letter was sent to each principal to present background information, purpose of the study, the promise of confidentiality and a copy of the questions to be asked. All interviews were conducted on site in the principal's office by the two authors. Each interview lasted from one and one-half to more than two hours. All interviews were audio-taped, and each interviewer also took copious notes.

After each interview, a summary was prepared from the notes and the audio-tapes. A revised summary was prepared after receiving feedback from each principal.

Data Analysis

Both the summaries and the more than 24 hours of taped interviews were analysed. Statements were sought which indicated principals' perceptions of the Teacher Centre program to determine if the expectations which the principals had for the staff developoment program were congruent with its stated goals and what effects the program had on principal's time, duties and responsibilities. In addition, an attempt was made to analyse the interviews using Miles' Eight Schools of Thought on organisational effectiveness. (The 8 schools are Scientific Management, Human Relations, Socio-technical, Organisational Development, Micro-economics, Goal Attainment, Systems Model, Integrated Model). Miles (1980) contends that criteria for determining organisational effectiveness should be a function of the school of thought.

Statements, thoughts and ideas generated through the interview process were matched by the researchers, independently, to an appropriate school of thought. For example, if a principal expected the staff development program to have some effect on student performance (make teachers more responsive to student needs and help teachers to reduce discipline problems), the perception was coded as indicating a Goal Attainment school of thought. If the principal expected the teacher to return from the Centre more efficient (reduce student disicipline problems, or improve teacher attendance and attitude) the Scientific Management school of thought was considered to be the predominate school of thought held by the principal.

Results

The purpose of this study was to analyse the perceptions of 12 secondary school principals concerning the staff development program implemented by the school district, to identify predominate schools of thought embraced by the principals and to determine how those schools of thought related to expectations for the inservice teacher education program. Findings from the interviews are presented first, followed by the analyses of schools of thoughts.

Interview Findings: Expectations. There were 28 different expectations expressed by the 12 principals. The expectations were nearly equally divided into remedial expectations and developmental expectations. Five principals had expectations that the teachers would return to the school with improved instructional skills. Three principals expected their teacher to "bring back new ideas," to have learned the district instructional teaching model and to be rejuvenated. Two principals expected their teacher to "gain knowledge about instruction" and to be able to relate to students better. These 7 expectations were the only common ones among the 12 principals. The remaining 21 expectations ranged from the very specific, e.g., to improve the teacher's attendance, to the very general, e.g., to have teachers read more. For example, one principal expected the program to develop a common language, while another expected the program to reduce discipline problems. One principal believed the program was designed to teach the concept of individualisation of instruction, but questioned the value of the staff development program in meeting that goal.

The staff development program of this study was designed to

(a) refresh the teachers' teaching skills, (b) expand the teachers' knowledge about new developments in their content area and (c) increase the teachers' awareness of the complexities of modern youth culture. All of the principals had expectations for improved instruction. None of the expectations voiced by the principals specifically addressed the other two goals of the program. Some principals expected teachers to get an update on research in education, but they did not see this as relating specifically to knowledge in their content field. And, while a number of other expectation statements could conceivably have referred to the second goal of the program, there were no expectation statements which even remotely related to the third goal, *viz.* to increase the teachers' awareness of the complexities of modern youth culture.

Interview Findings: Time. The questions of how much time was diverted away from their usual duties by the Teacher Centre program produced a wide variety of responses. Four principals responded in percentages: 30 to 35%, 25 % (from the principal of the school at which the Teacher Centre was located), 10%, and two hours per month. Others responded with statements such as,

> (1) nothing related to the Centre is that time consuming;
> (2) I don't spend as much time as required;
> (3) Centre activities are a part of the principal's responsibility and not different from site [i.e. the school] responsibility.

Others chose to respond by making statements such as,

> (1) I can't observe teachers as frequently as they want me to;
> (2) I don't get into the halls as frequently to deal with tardiness and loitering;
> (3) Much of the responsibility for running the school is falling to the vice principal;
> (4) time is at a premium."

Most of the principals identified the Replacement Teacher as creating the most difficult and time consuming problems. Principals judged that they were spending too much time with Replacement Teachers. They believed that Replacement Teachers were not qualified to teach some classes in the Scholars Program or Special Education, and that they did not have the expertise to handle extra curricular activities such as being the sponsor of the school newspaper. Principals felt handicapped because they had the responsibility to supervise the Replacement Teachers but the rating of their effectiveness was done by others. Several principals were faced with student discipline problems which they had not had with the regular teacher.

In addition, the principals said that paperwork increased and that more duplication was evident. Delegating responsibility among Assistants, Deans and Vice Principals increased because of the additional responsibilities expected of the building principal.

Ten of the 12 principals judged that this program placed an added burden on their time. Traditional responsibilities for monitoring the halls and offering community leadership were suffering from lack of attention. Paperwork had increased, and much of it was seen as duplication.

Interview Findings: Support. Most (10) of the principals felt that they had moral and professional support from central administration and the board of education (the governing body of the school district), but they lacked the resources necessary to institute new programs which required so much attention. The information and training which each principal received was considered to be extensive and meaningful. Because of this training the principals felt that they were better observers and that they could confer with teachers more constructively. One principal said that the relationship between himself and his staff was better than at any previous time. Only two principals said that they were not receiving enough support. One indicated that he meant financial support. The other felt that the central office (i.e. the district superintendent's office) was unaware of the role of the principal and that its expectations were unrealistic -- "more is expected and less help is available."

Interview Findings: Unexpected Outcomes. Anything newly implemented has unexpected outcomes. Nine of the 12 principals in this study reported such unexpected outcomes. The most often mentioned was that of changes in teacher attitude. Because teachers who visited the Teacher Centre had many opportunities to interact with adults (peers, college and university faculty, supervisors, guest speakers and content experts from business and industry), they shared experiences, talked about teaching and experienced a cross fertilisation of ideas.

Three principals expressed surprise at the improvement of attitudes. Both groups of teachers, those who spent time at the

Centre and those who did not, manifested a more positive attitude. What originally was considered to be a negative assignment changed as teachers began volunteering to participate. One principal said, "This time of year [May -- near the end of the academic year], teachers begin to shut down shop. As a result of this program, teachers are not shutting down.

Two principals were surprised that teachers were returning from the Centre as better teachers. Furthermore, they thought that because of participating in the Teacher Centre and being observed, the teachers had become not only better teachers but also more positive about students.

Three principals perceived that teachers had formed a common bond. They seemed to be pulling together, and they were keeping in touch by creating social events which brought them together periodically. Principals viewed the experience of the Teacher Centre as a positive encounter. It created a forum for discussing educational issues and a network of teachers which provided mutual professional support.

Other unexpected outcomes reported included the following: some Replacement Teachers could not handle discipline; the role of the district supervisors was in decline; people were fearful of losing jobs and or positions; students appreciated the regular teacher more; Replacement Teachers gave some unexpected flexibility and skills to the school which the regular teachers did not have.

Schools of Thought. An analysis of the perceptions of the principals was made using Miles' Eight Schools of Thought on organisational effectiveness (see Figure 2). According to Miles (1980), how one views the organisation has implications for judging and using criteria to determine effectiveness. "Indeed an organization [sic] can be effective or ineffective on a number of different facets that may be relatively independent of one another" (Lippitt, Langseth and Mossop, 1985). Staff development programs which are designed to enhance human relations may be viewed as unsuccessful when using goal attainment criteria to determine effectiveness. Because different criteria are used to measure effectiveness in studies of organisations it becomes impossible to compare the results of one study with another

School of Thought	Effectiveness Focus
Scientific Management	Views organisations as a closed, rational system and workers as simple and passive resources; organisational efficiency defines effectiveness.
Human Relations	Takes a less technical view of organisations; interfacing is valued (between individuals and organisations); a satisfied worker equals production
Sociotechnical	A blend of scientific management and human relations; recognises the dysfunction of neglecting either; fails to make connections between the two, however.
Organisational Development	Focuses on the internal processes within the organisation as the basis for effectiveness, intergroup linkages, open communications, team work, encourages empovee self development
Microeconomics	Overview; profit and return on investment; effectiveness determined by cost-effectiveness processes
Goal Attainment	Effectiveness viewed in terms of ends rather than the means to an end; all organisations have a set of goals; the ultimate goal can be identified and progress toward it can be measured
Systems Model	Focus is on means needed to achieve an end; recognises the interdependency among and between different groups; concerned with maintaining and adapting functions
Ecology Integrated Model	Effectiveness defined or determined by the system's ability to satisfy (minimally) multiple constituencies based on the relative power of organisation subgroups

Figure 2:
Eight Schools of Thought

(Miles, 1980). Therefore, if principals subscribe to different schools of thought and hold different expectations for a staff development program, determining effectives of the program becomes very difficult.

For this study, we analysed the principals' expectations as indicated in the interviews and matched them to an appropriate school of thought. The expectations were distributed across five schools of thought: Scientific Management; Human Relations; Organisation Development; Goal Attainment; and Integrated (Ecology).

Two principals' expectations reflected the Scientific Management school of thought. statements such as, "The Teacher Centre should be a vehicle for implementaion of school district programs and to help teachers reduce discipline problems," reflected the desire to have a smooth running organisation. These two principals might view the effectiveness of the Teacher Centre through its ability to produce organisational efficiency.

Three principals were concerned about Human Relations. Comments such as, "The Centre should develop a more positive attitude, be able to relate to students better," and "The time at the Centre should be rewarding and enjoyable," suggested that they would view the Centre as effective if it changed the attitudes and feelings of the people in their organisation and affected working conditions.

An Organisational Development school of thought was apparent in the statements of three principals. These principals focused on intergroup linkages, open communication and teamwork. They would view the Centre as effective if it provided the teachers an opportunity to share ideas and to create among the teachers a desire to want to share.

Comments such as, the Centre should "aid the teachers in getting better academic achievement" and "improve teacher attendance," were examples of statements related to the Goal Attainment School of Thought. Three principals reflected this school of thought in their expectations of the Centre. They viewed effectiveness in terms of ends rather than means.

One principal's set of expectations reflected the Integrated (Ecology) school of thought. This school of thought contains features of both goal attainment and open systems in a concern for satisfying the expectation of strategic constituencies (interest groups, coalitions and organisations upon which they depend). This one principal wanted his teacher to return to the school "more concerned about the community and having a better understanding of the role of the principal."

These data suggest that among the 12 principals there were distinctly different views of what would constitute effectiveness. Principals were looking for different outcomes from the Teacher Centre experience and the goals of the staff development program were rarely considered in their statements of these expectations.

Summary and Conclusions

There were many different expectations held by principals for the Teacher Centre experience, and no principals shared identical expectations. All principals shared expectations of improved instruction, and improved instruction was a formally stated goal of the inservice education program. The two other goals of the program, updating of teachers in content areas and developing understanding of the complexities of adolescent culture, were seldom mentioned in the principals' statements of their expectations.

Ten of the 12 principals felt that the Teacher Centre was an added burden, mostly in paperwork duplication and in taking time away from such traditional practices as monitoring halls and offering community leadership. Ten of the 12 principals felt that central administration (the superintendent's office) provided strong support for their efforts to become instructional leaders. They felt that the training which they received was extensive and meaningful. Only two principals felt that they lacked support (mostly financial) and that expectations were unrealistic.

Nine of the 12 principals reported outcomes of the Teacher Centre program which they had not expected. They were surprised to find that teachers' interactions among peers and others had been so productive and that teachers' attitudes about the Centre, even among those who had not attended the Centre, had changed from negative to positive. The principals reported that the teachers who attended the Centre had developed a "common bond" which helped to form a professional support group which met socially.

Expectations held by the 12 principals for the Teacher Centre program were distributed over five schools of thought: Scientific Management (two principals), Human Relations (three principals), Organisational Development (three principals), Goal Attainment (two principals), and Integrated Model (one principal). These data were evidence for the theses that principals viewed effectiveness from very different perspectives, that they were looking for different outcomes from the Teacher Centre and that their expectations were personal and often unrelated to the intended goals of the Centre.

It is clear that in future staff development efforts, secondary school principals should be more intimately involved in the planning and implementation of staff development programs, especially if they will be involved in overseeing the outcomes of the program. Special emphais should be given to the relationship between the goals of the program and the expectations of the principal. Principals judge staff development programs on the basis of how they view needs, and these needs are related to their individual schools of thought. It is important that this be understood by both the inservice education planners and the principal and that the principals learn to see the discrepancies between their expectations and the goals of the staff development program.

Planners of district wide staff development programs should also be aware that principals seem to be more concerned about their individual schools, staff and students, and to be less concerned about district wide problems or needs. This is understandable, but it points out the need to consider the unique problems of each school and relate them explicitly to the larger picture.

The principals recognised and appreciated the value in some unexpected outcomes of the staff development program, such as the personal and professional interactions which took place while teachers participated in the Centre activities. Many resented, however, the time which they were required to devote to the program. Such perceptions influence judgements about a program's effectiveness, and they can influence directly successful implementation of the program.

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An Educology of Models for Teaching: An Inquiry into Models and Modelling

Hugo McCann and Bevis Yaxley
University of Tasmania
Hobart, Tasmania, Australia

ABSTRACT

Models and modelling for teaching and education are much in vogue, but they must be used with caution. An unintelligent and ill-informed use of them can lead to an unreasoned orthodoxy in educational practice -- a strait-jacket of ideology and routine, rather than well reasoned and evidentially based effective and worthwhile educational practice. Models for teaching in the hands of the insufficiently informed can preclude improvement in educational practices, and their ill-informed use can even halt the extension of new knowledge about the educational process. Thus models and modelling for teaching must be subjected to continual critical examination, and measures must be taken to assure that those who formulate and those who use a set of models for teaching are adequately informed so as to preclude doing harm (1) to the educational process and (2) to the conduct of inquiry and research about the process (i.e. to educological inquiry and research).

Introduction

Our main concern in our analysis is with various ways in which models and modelling are important for teaching. We seek to initiate a critical examination of models for teaching by providing the context for a consideration of models and of the activity of modelling. We also wish to examine critically the language which is used to describe and explain the importance of models for teaching, and we wish to indicate some of the advantages and difficulties in using the language associated with models and modelling in educological discourse (Educological discourse is all discourse about the educational process, whether it be discourse about teaching, studying, learning or some other phenomenon within education.) It is our considered judgement that a critical examination of models is timely because there is much which the user of both models and modelling presumes, but does not often make explicit.

Several factors have converged to make models and modelling attractive to educologists (researchers and teachers about the educational process) and educators (teachers within the educational process). Among these factors are that models provide the user with an apparent objectivity and that models facilitate intersubjective debate among educologists and educators. As schooling is seen to be more of a co-operative and corporate enterprise, models may be needed to assist committee activity. For some users, the popularity and successes of models in the sciences and technology may have increased their attractiveness in education. It has given the educologist and the educator a sense of professional seriousness in describing and explaining the business of education and schooling.

The dangers of using models arise from a lack of sufficient understanding of the nature of modelling and from an insufficient awareness of the limitations of the models which are current in educological discourse. Model users often lack adequate critical awareness of the limits of the applications of their models. They are insufficiently aware that their work is limited by combinations of models. Such combinations create mutually reinforcing views of teaching and education, and they prevent, in effect, wide ranging critical review. The misuse of models can produce a closed-mindedness to the rich possibilities of effective and worthwhile practice within the educational process. In the hands of the insufficiently informed, a model can become an orthodoxy which stifles sound educational practices, rather than a medium for extending knowledge about the educational process and for guiding informed and intelligent educational practice within the process. It is in the complex activity of classrooms where the potentially harmful power of models is particularly evident, and the use of models in this context is in urgent need of critical review.

Some Background Notes

A number of writers have offered interesting insights into the relationships among metaphor, models and the educational process. The following is a small but illuminative selection of those insights.

> Our metaphor making, our model-constructing, is not the work of fancy but the work of what is most real of all -- the symbolising consciousness of man, a consciousness which operates through shifts, transfers, overlaps and criss-crossing movements. . . . When thought comes to a halt, when the material is dense and complex, then metaphor-making comes to our aid. The objection to putting it like this is that it reduces metaphor to a kind of interlude after which linear thinking again comes into full operation. An opposite extreme is to regard metaphor as a kind of protection against the strait-jacket of logic. Gomperz writes of Parmenides: ". . . his mind was imaginative and poetical, and [he] was thus protected from the logical consequences of his premises." A different and very unexpected admission of the crucial role of metaphor is made by A.J. Ayer in writing about Wittgenstein: "The turning point was the shift in Wittgenstein's philosophy, from the metaphor of treating words as pictures to the metaphor of treating words as tools." [Chatterjee, 1981: 64]

> Theories of learning are dependent on metaphors, because they are centrally concerned either with mental acts and conscious processes or with the operations of mental mechanisms below the level of consciousness, all of which are describable only by metaphorical means. [Elliott, 1984: 38]

> . . . I [have] suggested that the metaphors of education lack depth if they are thought without reference to the theories with which they are associated. It could be added that no metaphor can give us an insight into the essence of education, for education is not a natural species and does not have an essence. It is incredible, furthermore, that a metaphor should be sufficient in itself to change the current general conception of education. For such a change to be possible there would have had already to have been a large-scale intellectual change, a prodigious shifting in the cultural background, including at least the virtual emergence of a new theory of education with which the metaphor is in deep affinity. A metaphor on its own is no more able to restructure the cultural background than an eagle out over an abyss is able to restructure the mountain background. Metaphor is neverthless of great importance for human beings who, being embodied, have senses, imagination and feeling as conditions of action, and depend upon vitality for the accomplishement of the work

> of their spirit [Elliot, 1984 52-3]

> In what I have said, I have associated myself with both of two competing views of metaphor. I see metaphor acting sometimes as a means for the transfer of meaning across discontinuity, as a bridge or a boat is a means for transferring a person across a river, or, in other cases, as a more active tool of metamorphosis, of a restructuring of a portion of the world view. In either case, the metaphor has explicit or implicit boundaries. Since the metaphor is always contingent on the context, its boundary will also change as the context shifts (as it becomes possible to cut the atom, or as probabilism and indeterminacy enter.)
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> But while the detailed shape and power changes, I see a constancy that endures, and that I regard as the thematic centre of the metaphor. I need only indicate here in a word or two the differences I see between metaphors and themata. Themata are near-universals of science (as they are in other cultural artefacts). They operate at the level of structure and serve to endow the successive versions of metaphor, or a sequence of closely related metaphors, with a meaning that permits the retrieval of the inherent intention despite all evident, or even flamboyant, changes. Thus the sequence of circles, eccentrics, ellipsoids, precessing ellipsoids, Ellipsenverein, etc., are variations on one thema, namely the efficacy of geometrical explanation. In fact, as often is the case, a particular metaphor may be at the intersect of two or more themata -- in this case both the efficacy of geometrical explanation and thema direct, centralized perception (Anschauung). [Holton, 1984: 112-3]

Models in Science Teaching: An Example

We recently interviewed a science teacher who also held the post of science curriculum consultant to science teachers within a network of schools. He is regarded as being successful and well informed about both science and teaching.

The teacher told us of some work which he had been doing with Grade 6 students (in their 6th year of school, or around ages11-12). He was very concerned that science should be seen by the students as something which they can do. He wanted them to understand the sorts of reflections and conversations in which they needed to engage in order to arrive at a clear and defensible conception of physical phenomena.

He had provided a primary class with a large piece of bone. It had a natural hole in a position which was crucial for the accurate classification of the animal from which the bone originated. The children were asked to describe in words and with drawings the animal to which they believed the bone had belonged. He was particularly impressed by the approaches taken by the group of students in listing the possibilities and in discounting those which did not conform to the major hypotheses. The students eventually arrived at the realisation that the bone had to come from a small whale because of, among other features, the location of the hole in the bone. He regarded the lesson as being particularly successful. It matched his model of scientific activity. It conformed to his notion of how one should teach. It fitted his model of how people learn and how they learn to apply their understanding by focused action.

Although the lesson conformed to his ideals, he could not say why this particular activity was the one which he and his team of curriculum developers had chosen on that day. He could not say why it had had to be this bone, nor why it had to be this animal, nor why it had to be animal anatomy. Surely, there must be some set of generalisable reasons for the choice of a particular activity in science, we maintained. The curriculum consultant agreed, but he could not say in that interview what these reasons were.

This consultant was skilled, and he was knowledgeable about both science and teaching. He was very aware of models in science, and he was an inveterate drawer of diagrams when he was trying to expain or to work something out. The models he had at his disposal fit together to confirm his actions and his evaluation of the work done by the children. But when he confronted the questions of why this particular activity was suitable and chosen, or what should be done next with this group, he could not answer. The topics were chosen on some basis of serendipity. He did not have an easily accessible model which explained possible practical sequences for work with late primary children, sequences which required the choice of concrete activities. His models allowed him to examine his work in a critical and abstract way, but not to specify what activities should have been preferred. Many sequences of activities fit his set of models and he had difficulty in limiting his focus.

This would not have mattered if it were not the case that choice must be made in teaching. But all sequences lead somewhere, and any school's activities must be defensible in terms of the purposes which have been discerned for the school program. The purposes help direct teacher and pupil efforts. The science consultant's reply would be that it is the critical processing of ideas which is all important. But the processing must be of something. "Wheelspinning" and "marking time" are not adequate reasons for activities in the context of schooling.

The science curriculum consultant's classroom activity of identification of an animal species through examination of key bones did not seem to be "wheelspinning" on the face of it, but his discussion of the theoretical basis for choice of classroom activity was obscure. Doubtless, his program might deliver excellent information processing, but would it leave out matters which none of us want to leave to chance? That is a question he could not answer.

This science curriculum consultant has models of science and scientific activity -- models of doing and knowing scientifically. He has a model of teaching, studying and learning in that he conceives of teaching, studying and learning as inextricably interrelated in the pursuit of significant meaning. He has a model of education which gives him an embedded, or submerged, notion of the person, and of society. For him it is essential in science that the pupil must be encouraged to argue through answers to specific questions. These models combine, it would seem, to provide an educological theory which allows him to choose groups of teaching, studying and learning activities, to assess pupils, and to evaluate programs. However, during this interview he could only "handwave" when asked what he would recommend one did next, or when asked to explain why the "bone instance" had been chosen before other examples which also met the requisites of his models.

Models in Educological Discourse

A question which needs to be addressed is that of *what is at issue in the use of the terms 'model' and 'modelling' in educological discourse.* Two matters are of immediate interest and importance.

The first matter relates to the notion of teaching which, in current usage, is not restricted to official formal instruction or straight didactic action, but includes the use of various activities and forms of conversation. Teaching is certainly not restricted to lecturing so that the students who are being taught are left largely passive, both physically and intellectually. The shift in teaching approaches, or in the repertoires used in teaching, which one may note in schools, depends on changing views of humankind, society, learning and knowing. These changing and extended views have complicated the critical examination of teaching. To facilitate this critical examination, models of teaching have become a feature of educological discourse. This appears to be an attempt to find clear ways of presenting the complex interconnections and interactions perceived to be necessary for the improvement of teaching, studying and learning in schools.

Turning to the second matter, the term 'model' is one which is used increasingly in educological discourse. One seems to hear with increasing frequency of the importance of models and modelling in teaching, studying and learning. One sometimes hears that someone has an inadequate model of human understanding or that someone does not provide a satisfactory model for the students in the areas of, say, problem solving in mathematics or problem formulation in economics. Among some teachers, it is held that it is the modelling of the process of inquiry which is more important for effective teaching than for a teacher to know a fund of knowledge which has been established by the disciplined use of inquiry.

What becomes clear is that the range of uses of the term 'model' and its variants such as 'modelling' and 'modelled' are on the increase. As is usual in such cases, these usages need to be examined and monitored carefully. One of the dangers of the growing currency of the term 'models' is that its usage might become part of some unreasoned, routine, closed-minded and ultimately meaningless educological cant. A similar popularity could be noted in the use of the term 'concept' in the late 60s and early 70s among teachers, advertisers and politicians. As a result, the term became meaningless in discourse about teaching.

A renewed interest in teaching (and a concomitant interest in models for teaching), in both theoretical and practical terms, has arisen partly because of the demand that schools become more accountable, and that they retain pupils to the end of the Grade 12

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year (the 12th year of school or age 18). What counts as good teaching therefore can no longer be judged in terms of skill in exposition alone. There must be results -- an increased population of students in upper secondary schools and evidence of students' achievement of intended learning outcomes.

This is not to denigrate skilled exposition, nor to suggest that there might not be several models of exposition which would improve teaching. What has been occurring in the last 20 years has been a shift in the operational stereotype by which we understand what teaching is. For many centuries the notion of teaching has been focused, well nigh metonymically, on telling. Telling has been seen to be the basic notion of teaching. If we add other metonyms to that of telling, say coaching or acting like Socrates with the slaveboy in the bringing to birth of an idea or understanding, our understanding of teaching, studying and learning changes quite racially.

There are new standards by which to judge teaching, studying and learning. To come to terms with the implications of those new standards, educologists have turned to constructing new models of teaching (or making explicit tacit models). The modelling process can produce some quite complex results. This is indicated, for instance, by Joyce and Weil (1986). They tell us of views or models of teaching that they "have grouped into four families that share orientations toward human beings and how they learn" (Joyce and Weil, 1986: 5). These families and their members are:

(1) the information processing family (concept attainment, inductive thinking, inquiry training, advanced organisers, memorisation, developing intellect, scientific inquiry);
(2) the social family (group investigation, role playing, jurisprudential inquiry, laboratory training, social science inquiry);
(3) the behavioural systems family (mastery learning, direct instruction, social learning theory, learning self control, training for skill and concept development, assertiveness training);
(4) the personal family (nondirective teaching, synectics, awareness training, classroom meeting).

Plainly, the families offered by Joyce and Weil (1986) emphasise the range of models and modelling being offered in the 1980s in the area of educological debate and theory If one listens to many current review sessions on educational practice and planning for the immediate future, one finds that these models, or their like, do not remain theoretical in any abstract sense. They are, in fact, used to make and justify practical decisions about money, materials and staffing. The models for teaching are in a sense reified. Although it is problematic that they in fact exist, they are given the status of being real entities or phenomena within the educational process.

Within educological discourse, simple, compound and complex models for teaching are mixed together like they were so much flour and water. This conflation adds to the difficulty of making any sense of the models and of educational practices which are purported to be derived from the models.

Most educological models (i.e. models for teaching, studying and learning) are of the compound or complex kind. Of these complex models, one of the most frequently occurring is the hierarchical one, which may be either top down or bottom up. Such hierarchies, we suggest, can be heirarchies of models. This creates much of the difficulty with educological models (or models for education).

We present the Joyce and Weil (1986) list by way of a significant example. It is fraught with many issues about the nature and use of metaphors. The metaphors, in turn, are embedded in models which are grouped into what are claimed to be families. These webs of metaphor and model are difficult to disentangle, and their entanglement obscures the lines of intellectual energy which power them and their applications. The Joyce and Weil (1986) description is not a lone example. There are many others. For instance, Brady (1985: 11) distinguishes the following models of teaching: exposition, behavioural, cognitive developmental, interactive and transactive (Brady, 1985: 11). He makes the additional claim that this spectrum of models moves from teacher-centred to pupil-centred education. He argues that exposition is more teacher-centred in that it focuses on what the teacher does and that transaction is pupil-centred in that it is very much concerned with what happens between the teacher and the student.

In the related area of curriculum study, there has also been widespread use of a range of modelling. Brady (1987) distinguishes among the following models of the curriclum: objectives model, interaction model and process models. There are parallels here to the models of teaching range which moves from focusing on action on what occurs outside the student to a focus on what the student is doing (processing).

Print (1987) combines teaching and curriculum models when considering ways of facilitating effective studying. He suggests (1987: 132) that it is desirable to involve students "in learning situations that are as real life as possible, that is, to replicate the real world by creating models of the salient features of that world." He proposes further a continuum of models of reality ranging from high reality to abstract reality. Within this continuum, he includes physical models such as flight simulators, and architectural models, work models such as practice teaching and apprenticeship, games and simulations such as Monopoly and Test Cricket, and role playing such as job interviews and share trading. (See Figure 1, from Print, 1987: 133.)

High Reality ‹-----------------------------›			Abstract Reality
Physical Models	Work Models	Games/Simulations	Role Playing
Flight Simulator Architectural Model Ship Simulator	Practice Teaching Articled Clerkship Apprenticeship	Star Power Monopoly Test Cricket	Students adopt roles and act out situations to reflect on poverty, job interview, share trading

Figure 1:
Continuum of Models of Reality from Print (1987: 133)

One further notion of model seems important in this analysis. If one examines educological discourse, one hears of the teacher or educator acting as a model for the student. It is not always clear whether the modelling in the such cases is conscious though, it is argued, it should be. The effect on the student of any teacher action may, nevertheless, be that of carefully prepared action. If the teacher only asks "closed questions," it is argued, the student acquires a limited notion of learning.

The notion of persons being models is not, of course, new. In previous historical periods of educological discourse, a teacher or fellow student was expected to be a moral, or intellectual model, to which we might give the name 'paragon'. The teacher was expected to act as an exemplar in the way "good pupils" were thought to do in our childhood. Yet, such a person might not be a successful model for many children or students. The exemplar may be used to form a basis for exhortaion -- *Why don't you act like so,* or *Why don't you complete your notes like so?* Even if the hortatory reason is not the sole or actual reason, the teacher acting as an exemplar may not be enough if the exemplar does not allow the students to engage in some way which makes sense to them, and which they can try out and learn from errors. So complex and dynamic is the interplay of factors involved in someone's success in learning, that observing Mary or John as models may not of itself allow someone else to learn from them. In human affairs, it may be the case that no one can be an adequate model since each human individual is living a unique existence. One needs to try out what one observes in some way -- perhaps in an imaginative reconstruction -- if one is to learn from the performance of others, and the trials need to be monitored through the responses of others.

Sir Karl Popper describes his use of models, which is related to visual presentation.

> When I am trying to formulate a theory, or a new way of critically looking at a whole field of results, I'm all the time thinking in terms of diagrams, often with dynamic perspectives. That is to say, I conjure up in my mind imaginative dynamic pictures or models of events. [Popper and Eccles, 1981 465]

Critically Examining a Model

The spatial and visual aspects of models are significant matters in two important ways. One is that the spatial presentation may assist reification of a model which does not, in many circumstances, warrant such an action. The second is that one needs to ask the question repeatedly, *How does the model relate to that of which it claims to be model?* There is, perhaps, a third issue, especially when one considers that which Popper has written. This is the questions. *How do the parts of the model interact with each other, how do they 'move,' as it were?*

The central matter for the user of models and modelling activities is just how the model and modelling relate to what is being modelled. In many cases what is being modelled is not an actual world but the heuristic reflections of a theorist. This is especially true when general policy matters are being examined and developed in education. In these matters one may distinguish between models of physical reality and models of nonphysical reality. The latter are models which substitute for, or come to be theories, or which come to constitute social and intellectual reality. The fact that they can constitute such "realities" is significant in inquiries into teaching.

It is easy to see how models operate when one is dealing with physical models such as scale miniatures. The miniature has advantages to offer the user in that it is recognisable for what it represents, and it can be critised for its congruency with that which it models. Rather than by investigating the objects directly, by looking at miniature models, or indeed in looking at models which scale up as in the case of models of insects, one may learn from the model about actual objects. There is an important sense in which both the model can become the primary subject, and the object, the secondary subject of our reflections. In this case, the object and the model interact to provide new ways of understanding one, the other or both.

Many models which have similarities to maps are worth considering. Maps can, in their representation of reality, feature only certain aspects of it, for example, political territory, physical terrain, rainfall, population density, or language accents and idioms in some region or regions. In featuring a particular matter, certain information is discounted. For example, a language map of a European country excludes physical contours. Such information is unnecessary, or distracting, from the major focus of attention. Progressively, a map may lose all direct contact with the ordinary perceptual world, and it may end up somewhat like the London Underground diagram. This does not map, in any direct way, the physical reality of London. Nevertheless, the map presents an immensely helpful visual representation of the complex physical reationships among the stations and street grid of London. In order to meet the needs of the traveller, who wants directions for how to move around a world beneath the ground, the London Underground map sacrifices much of the information about London. The shared purpose of the map maker and the traveller makes the map a sparse, but adequate way of describing reality from a single purpose perspective. It permits information of considerable spatial complexity to be recorded and referenced in a very clear yet economic way. The mind of the user constantly transacts with the Underground diagram and the actual world of London. The London Underground map with its abstract spatial modelling of physical relationships, and its use of colour coding to allow the user to select connections, is a remarkable example of the power of an abstract model which, for immediate practical action, abstracts from physical reality. The user has a clear notion of how to relate the model to the world and thus how to use it in planned purposeful action.

Other abstract models are in use in which their purpose, and the relation of the model to the actual world, are not so clear. Consider models of an economic system. These deal with nonmaterial relationships for significant areas of the situation under examination. To deal with the interconnections of these relationships, the model may be expressed in terms of abstract categories using a mathematical schema or schemas. It serves to describe, explain and predict certain outcomes. The model is a device for collecting and relating wide ranges of information which, in many cases, are quite disparate. But when placed within the mathematical schema of the model, the data are made to influence each other. In this sense, the model is dynamic. One can enter new data, such as changes in population, consumption or weather patterns, and see what influences they would have on other features already established in the model. The model is not the actual economic interchanges, but it allows the reality to be approximated and understood more adequately. The economic model allows the formulation, or conception, of problems before they occur in the actual world. The worlds of finance and economic management and their models provide interactive theoretical grounds which are open to review by the economists and their clients, as well as by the econometrists who enjoy model making.

The London Underground model is testable everyday by users, new and experienced alike. The users apply the model of the rail system and find it to correspond, in an important sense, to the physical reality of London. The econometric model can also be tested. It users critically examine its ability to account for certain features in the world of economic encounters and also to predict certain outcomes when certain information is fed into the model. The predicted outcomes can be assessed against what actually occurs. From this assessment the model may be refined, or abandoned.

In both these cases, it is reasonably clear to all the participants what is being modelled. In the case of the London Underground model, no one expects to find out about the architectural aspects of the surface from following the ubiquitous diagrams, nor to obtain the current train timetable, nor the state of the weather, nor a boundless set of other matters which may be related to travel around the system. The user is more or less aware of the limitations of the model. Furthermore, someone learning how to use the model can learn from observing others' use of the diagram, and from careful checking and rechecking the model with the actual stations through which the trains travel.

In the case of the econometric model, there may be more difficulty in establishing to what extent it is all embracing. It may be difficult, in any econometric model, to quantify such matters as the impact of national pride, of social trends, religious fervour, the schooling or training provisions and cultural traditions about food and work on the gross national product. The limitations of any econometric model may be clearer to the expert than it is to the journalist, or politician, who uses the model in explaining or making decisions.

The expert, one presumes, is aware of the heuristic nature of the model. The expert remains conscious of the significant differences between any model and the actuality of economic activity. The expert's use of the model may thus be more tentative than other users of the model because of the expert's understanding of the intellectual standing of the model and thus of its boundaries. For the expert the model never ceased to be a model. If we were to see the model as being somewhat like metaphor in its intellectual nature, then the model, for the expert, would not become a dead model in the way that many metaphors become dead or at least very nearly moribund in common use. It is unlikely that one would confuse the model of the underground with the physical reality of London. The user recognises, and the user continually encounters reminders, that the model does not claim to represent reality photographically. With economic models one may suspect that, being more encompassing, they run the risk of being confused with the actual. Like a dead metaphor, the model may confuse some because the model ceases to be contentious or provisional.

Many minds appear to find that spatial representations of complex inter-relations assist one to focus one's intellect. In shared intellectual action -- brain storming, or being a member of a research team -- it is remarkable how often participants resort to the use of diagrams or visual or physical models. The adequacy of models is affected by the medium of the modelling. Two dimensional models, for instance, gain clarity by their simplification, but they lose accuracy when that which is modelled is multidimensional, or dynamic, or both. When an introductory acquaintance is what is sought, simplicity may be a characteristic to be welcomed. But the simplicity may become an obstacle to further understanding when the matter is very demanding as, for instance, when Rutherford's planetary model of the atom is used to introduce a student to modern subatomic physics. The planetary model is very difficult to transform into Bohr's view of the nature and activity of the particles. Indeed, the Rutherford model makes presumptions about the nature of reality which are denied by Bohr's model. The Bohr model, after all, accepts a basic indeterminancy which is noncommensurable with Newtonian physics.

The term, 'modelling', being a participle or gerund, indicates some kind of activity which may involve these kinds of models, i.e. spatial representations of complex inter-relationships. Some teachers will draw attention to the imaging processes which the models are thought to assist. In fields outside of education, such models and imaging are taught to international athletes, other skilled practitioners and in recent years, as a means of helping with cancer therapy in order to improve controlled physical performance. Within the educational process, it is assumed by many teachers (and educologists) that the activity of modelling will help the student enter into a more intelligent engagement of a personal search for understanding and meaning. It is their belief that being more reflectively aware is an important condition of mind in the process of improving individual performance. Some educologists seek to explore a field of inquiry by proposing and criticising models in the field through conscious application of the models. These models are used to explore how one knows about the field under review. In doing this, the model maker can note more about the field and how to proceed to find out more while justifying claims to know anything about the field. That is educologists, who share the conceptual activity of model making with students, hold that they are revealing to the student ways in which one tests for coherence and plausibility in the pursuit of acceptable theories for action and reflection about education.

Critically Examining Models in Teaching

In many cases, teachers take the view that they are not merely purveyors of information. They conceive their chief task to be one of encouraging understanding on the part of their students, and the teachers undertake to model for their students how to obtain, justify and use knowledge. They accept, more or less consciously, E.M. Forster's oft quoted exhortation "Only connect," and they seek to show their students not only what to connect, but how, when and why to do so. In these cases, it appears that the teacher does not restrict teaching to instruction, but acts in ways which feature, for the student, what is to be acquired as connections to be practised and patterns to be critically noted and applied. The teacher acts like a master craftsperson in relation to an apprentice, or like a sports or games coach in relation to a sportsperson in training. In doing this, the teacher seeks to highlight the significant matters in crucial situations -- in a game, in a problem, using certain materials, or working with certain ideas -- and show how to make connections among the features which satisfy the purposes of the student.

It will prove helpful to this analysis of models of teaching to offer a tentative classification of the kinds of models and modelling which may be observed operative within the educational process. These appear in different ways in teaching and in the development of teaching repertoires. The models include, for example, (1) descriptive, (2) explanatory, (3) training, (4) heuristic, (5) cognitive, (6) persuasive, (7) pedagogical, (8) ontological, (9) evocative and (10) submerged models.

While each of these can be a fruitful focus of attention, the last of these, the "submerged" model, is different in important ways from the others. It includes the models which are frequently linked with theories concerning reality and knowledge which the teacher and the students may never notice and are, therefore, unable to analyse critically. Examples of submerged models in teaching might be the obvious ones of the "jug to mug" view of the relationship between the teacher and the student, or the "garden of children" view of how children develop and are to be tended, or the computer awaiting a good programmer -- a view deeply influenced, one presumes, by articifial intelligence in its understanding of human learning and ideas processing. Though submerged models -- with their associated submerged metaphors -- are of vital importance in the study of teaching and the curriculum, they are not the central focus of our analysis of models in teaching. Our central concern is the critical analysis of models in terms of what is the purpose of models or modelling in education is, how the models select information and how the models may be interrelated. We are also concerned with raising the question of how models are understood to represent the actualities of schooling and teaching.

These last matters are highlighted for attention in the list of models set out above, i.e. the descriptive model, explanatory model, training model, etc.

One presumes that descriptive models can be tested against that which is being described, and against the level of description which they represent. Explanatory models can be tested in terms of how well they predict outcomes. Training models may, like other instructional models, simplify in an attempt to provide an introductory understanding in a particular area. All training models run the risk that they are difficult to transform into more complex understanding, and an extended use of the model will eventually inhibit the student. Heuristic models may be used by students and experts in a discipline, or an area. Their power lies in helping users to formulate, for themselves, testable hypotheses and, if well developed, heuristic models may encode various kinds of models of what exists and how it is knowable. All models may have some persuasive power, but not all are presented to limit attention. One presumes that in terms of politics and in the educology of politics (i.e. the politics which influences education), there may be several models which are, in effect, persuasive and limiting in intent and educational outcome.

By way of completing this introductory critical exercise the list of models provided by Print (1987) offers a useful focus for attention. (See Figure 1.) Print's model -- a model of models in effect -- is attractive since it raises many interesting issues about what it models and about the areas in education to which it does not attend. Into what category, for instance, should theoretical models be classified?

One presumes that theoretical models are more abstract than the ones listed in Print's diagram. We would place these over on the right of the present diagram. In what ways would such models be more abstract? What is needed is a couple of examples of theoretical models. The traditional lesson plan based upon Herbart's hydraulic theory of mind might provide a good example, or Piaget's theory of cognitive development might be set out as a model. The theoretical model's relation to the actual and the particular case will be one of the matters which needs continuing attention by any user of the model.

However in all the instances listed by Print (1987), it is clear how the model may be checked. One can examine how it is related to the actual world and to the situations which it represents. Accordingly, it is possible to consider the adequacy of the model. Perhaps, as with a map, it also is possible to consider several layers of models at once. Inpractice, Print's models may be found to be composed of several subsumed models. The subsumed models need to be made explicit and to be explicated prior to the process of assessing the model.

One assumes that in practice teaching, for instance, several models are to be observed in action and interaction. Even though it is possible to note these models, there is no necessary implication that everyone can see how the models act on each other. It is not always obvious to the naive observer that models frequently support each other and occasionally contradict each other. Nor is it obvious to the inexperienced observer that models sometimes set the boundaries to the range of the observer's attention. A student teacher can be caught within the web of models which inform modern classroom practice, rather than to be enlightened by the models. Indeed it is common to find Diploma of Education students who have not been able, after several weeks in a class, to notice how the teacher organises time and record keeping in the primary or infant classroom. They can report on the surface patterns but not on the "deep structures" of the program. They lack any heuristic model by which to note and record their experience. One might reasonably expect that they would see the point of noticing how time (duration and scheduling), grouping and materials intersect in several ways in the systematic planning and operation of the primary classroom, but this is often not the case.

The models which Print (1987) presents are ones which allow one to practise and to manage in situations which may be more or less clearly delimited. One can grasp how to judge the adequacy of a flight simulator and of a person's performance in one. One may compare the architect's model with the actual world, and imaginatively project the changes proposed onto the actual world. In the apprenticeship relationship, one may learn from a master craftsperson not only the explicit criteria for action and judgement, but also the unstateable lore and perception which the expert accrues over time and which the student may come to understand implicitly. The successful apprenticeship master, like the successful sports coach, helps the learner envisage successful performance. The simulation exercise allows one to slow down actual life by acting in ways which permit criticism and self criticism to augment the individual's ability to cope with complex and dynamic situations. Simulation permits the learner to combine knowing how and knowing that without the irrevocability of actual life. It allows one to learn from experience without the risks of actual experience.

Print's (1987) model permits one to notice the power of models to enable humankind to become more general and abstract in thought and practical reflection. But it does not include the more abstract modelling that one finds in mathematics and areas of study like education. The model allows one to notice that modelling does meet many of the purposes of modelling set out above. However, Print's (1987) model does not give an adequate account of the kind of modelling which allows one to reflect on the ontological and heuristic investigations which models enable one to undertake. Nor do the examples he has on offer indicate the epistemological and ontological issues which are raised by pedagogical approaches.

Just how abstract modelling can be made to be in modern planning and evaluation is indicated by the list which was cited from Brady's (1987) work earlier. The four families of models listed are thought to describe the range of modern teaching approaches:

> (1) information processing family (this includes concept attainment, inductive thinking, inquiry training, advanced organisers, memorisation, developing intellect, scientific inquiry),
> (2) the social family (this includes group investigation, role playing, jurisprudential inquiry, laboratory training, social science inquiry);
> (3) the behavioural systems family (this includes mastery learning, direct instruction, social learning theory, learning self control, training for skill and concept development, assertiveness training);
> (4) the personal family (this includes nondirective teaching, synectics, awareness training, classroom meeting) [Brady, 1987]

Each of these families raises important questions about what learning is and what, in fact, is real. These questions include, (1) *how should we classify human actions,* (2) *what is given in, and what is constructed by, human experience,* (3) *to what extent do the models arise from human experience, and to what extent are they* a priori *categories without any experiential basis?* Since we are concerned with schooling and education, it is clear that limits of any model might easily mean the limits of my teaching world.

All the models raise questions of value and moral judgement related to teaching. To espouse any of these models without being aware of how they relate to the world, or indeed without asking what we take the world to be, is to be in the position of being unable to check the model against the levels of attention and description of the world. To espouse them uncritically is to show a form of professional irresponsiblity. Some of the families of teaching models work on the assumption, for instance, that human nature is undilutedly good, and that it is the failure of the school and society which causes certain outcomes to take place. One finds numbers of unqualified statements, within the ambit of some models, that it is the aim of education to develop fully all the potentialities of the pupil. There is surely a case to be made that some potentialities should not be encouraged. Each of these models raises important questions about the nature of the teaching and studying relationships. Each makes assumptions about the nature of human learning and how it is enhanced by teaching.

In selecting a model, or family of models, one ends up with a certain teaching style, or range of styles. The models are involved in the following ways in the acts of teaching:

recognising
describing
testing
reviewing
analysing
comparing
sharing
negotiating
communicating
assessing
satisfying curiosity

Print's (1987) families of models raise different kinds of questions about the nature of the models being offered. How are we to understand the term 'family' in this context? Are we concerned with a formulation which derives from the later Wittengenstein's view that there are family resemblances (*Philosophical Investigations*, 1963, No. 67) among concepts? How helpful is this metaphor when used to group models?

Family resemblances can be difficult to establish and may allow one to set up unjustified expections and presumptions about human individuals, ideas and models. The notion of family applied to groups of teaching approaches may have applied to it Wittgenstein's comment that

> I can think of no better expression to characterise these similarities than "family resemblances;" for the various resemblances between members of a family build, features, colour of eyes, gait, temperament, etc etc overlap and criss-cross in the same way. [*Philosophical Investigations*, 1963, No 67]

The metaphors of overlap and criss cross indicate a spatialisation of the complexity of the notion of family and family relations Families can be set out on hierarchical charts showing the different generations. Is it appropriate to treat these families of models in the same way, for instance? Or are we to restrict ourselves to surface similarities only? What is meant by 'information' in information processing, and is this an adequate way of considering human intellectual activity? Are we to presume that a computer model of some kind underpins the formulation of this family? What kind of computer model is being proposed and how apposite is it for mapping human mental activity?

One might interrogate each of the families of models in a detailed manner. That is not possible here, nor is it the purpose of this analysis. The intention has been to focus attention on models and the language of modelling as it applies to teaching so that the growth of such language and such activity may be critically examined. That this may be a matter of urgency is shown by the inherent difficulties in constructing and using models as has been iindicated, and the attraction of models for thinkers dealing with difficult areas of practice.

Considering the Power of Models Critically

A helpful way to conclude is to look in some detail at the ideas of Mortimer J. Adler's *Paideia* committee (1982). In attempting to make a statement about the renewal of the American education system, Adler's group is insistent that the curriculum is not a sufficient focus for educational reform. Attention must be devoted to teaching. In initiating this attention the group offers a model of teaching repertoires to be encouraged in schools. Three broad groupings are offered: didactic instruction, coaching and maieutic or Socratic relationships ('Maieutics' refers to midwifery, and in this context assigns the teacher the task of helping students give birth to their own insights and ideas.)

The Paideia committee's model makes assumptions about the nature of learning, the nature of knowing, the ways in which content and process are related in learning and teaching, the

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transmission of, and the approaches to, knowledge. Didactics is related to the transmission of information and content. Didactics fits well with those who see the curriculum and teaching as conveniently considered and administered in terms of collections of largely separated codes. Coaching, a metaphor derived from sporting activities, deals with skills, competencies and capabilities. It emphasises action on the student's part to put the knowing -- both knowing how and knowing that -- to work in some way. Maieutics is concerned with helping the student extend understanding, or to develop individual insights, or to produce original descriptions or theories.

The Paideia model has the advantage of considering the nature of teaching in a wide-ranging way. It has the disadvantage that it is difficult to decide in actual practice when certain pedagogic action belongs to one or other of the areas nominated in the model. Some kinds of lecturing might belong to maieutics as much as small group discussions. Some forms of coaching might turn out to be didactics with a small group. Some small group discussion might, in some areas of knowledge, be seen to be a form of coaching.

The Paideia model is helpful in illuminating the notion of repertoires in the study of teaching, but, while it serves that useful purpose, it is not a good descriptive instrument for recording teacher action. It is difficult to see how, exactly, it represents or prescribes for the world of practice. It is helpful in drawing to our attention the areas of knowledge which lend themselves to each of the areas of the teaching repertoires. Didactics is seen as being involved with traditional subjects (language, the fine arts, mathematics and the like); coaching is seen to be used in supervised practice as one might find in oral performance, in calculation, in exercising critical judgements; maieutics seeks to help the student form powerful questions to which various answers may be offered, and tested, as one might do in the arts, in discussing books or reviewing scientific practice.

Yet, on closer examination, it appears that choice of one part of the repertoire in preference to another is dependent on assumptions about experience, understanding, teaching and learning, as much as about anything else. One can see that science may be taught using maieutics - one thinks of Socrates with the slave boy, in the *Meno*, and remembers especially that Socrates had a model of reality and human knowing which informed his actions. The remarkable fact is that one might act like Socrates and not know or agree with Socrates' model. With a different model of teaching and studying one might end up accepting Socrates' skill in questioning, yet hold that the questioning is a form of skilled instruction and not an action to assist the flawed memory of the boy.

Curiously, the Paideia Committee appears to restrict maieutics to the areas of artistic endeavour. Perhaps the Paideia group may see science as an art, or a humanity in some profound sense, and many of us may only have at our immediate disposal a model which enshrines a binary division of human intellectual activity into the sciences and the humanities. The uncritical acceptance of this model may lead to unnecessary limitations on work in education.

Our schools may have been designed on the didactics model as can be seen in the physical arrangements of classrooms and the practice followed in the making of timetables. If one intended to extend the repertoire it would have consequences for the ways in which staff are deployed and the ways in which the program is planned, described and evaluated. This invites a return to our example of the science consultant. Models combine to inform action in and outside of the classroom. But informing action has its strengths and weaknesses. Informed action may serve to restrict categories of attention as well as to permit one to see matters from new points of view.

If we were to accept that the repertoire of teaching should include, in the secondary years, the coaching and the maieutics models, then the conceptual and physical frameworks which inform the construction of the society of the school would have to change considerably. It is possible to run the school like a bus timetable if one is concerned with the actions of the instructors. If one is concerned with the actions of the students, as the coach and the maieutics teacher presumably have to be, then the timetable and choice of materials and activities need to be much more flexible items.

To accept such a view is to raise questions about the model of the human person whom we wish to accept as fundamental to our schooling process. That the "jug-to-mug" model has held sway is evident. It has been supported by views of knowing and learning which have conspired to produce rigid models of schooling in which it was clear that the students were failing the school and that it was impossible for the school to fail the students.

The didactics model lends itself to clear boundaries of subject organisation, space utilisation and scheduling and thus to views of administration of school in terms of space, time, grouping, records and evaluation. The other models may not give the same clarity of classification, hierarchies of action and direction to decision making. Yet clarity, which, all things being equal, is to be sought and welcomed, may not of itself be a recommendation for any approach. To conduct a detailed analysis into the clarity of the models of teaching presented here is not our purpose. Our intent has been to encourage a close examinatin of the nature and use of models and modelling in teaching and studying.

The science curriculum consultant with whom we began this analysis is very confident that we must accept something like the maieutics and coaching models of teaching into our planning and descriptions of teaching and evaluating. He resists a return to the didactics model as the sole centre of attention in teaching. However, the didactics model did give both the teacher and the student the chance to know what the content and sequence of the program of study would be. Our consultant had difficulty in saying what came next in his coaching and maieutics approach. He could draw diagrams to show the studying and teaching cycle, but not ones which showed the content which he did not want to leave to chance. His attention had become focused on a broad band of matters related to teaching and studying, yet his models of scientific activity and teaching had combined to leave other matters to good fortune. His was a case of certain models supporting, yet limiting, the range of attention he was able to give to teaching and studying. The possible connections between models which constitute science and those which inform teaching and studying in schools were not clear to him. The combination of physical and nonphysical models poses many levels of difficulty.

Our argument has shown, we believe, that the power, influence and complexity of models and modelling are sufficient factors to justify an inquiry into the use of modelling and models for education and teaching. Our analysis has offered some suggestions as to how that inquiry might proceed. What we look forward to is a conversation about the nature of models used in planning classroom work and in facilitating co-operative work in schools. Presumably, the conversation will lead to an examination of the explicit and implicit models in use in teaching across the curriculum. This in turn will enable a classification of models in use to be made and the nature of the benefits to be observed from their use to be described, debated and assessed.

In this debate, we recommend that the following matters need to be given serious and considered attention.

(1) What is the nature and purpose of any model in use? What are the variety of its metaphoric expressions? Are there several models combined in the formulation of the activity or area? Is the combination of models justified?

(2) What is the relation of any model used, either in assisting learning or in planning teaching, to the matters which it seeks to model? Are the relationships clear to the users of the model?

(3) What assumptions does any model make about reality and the application of models to understanding and creation of the realities of schooling?

(4) What is the nature of the modelling? Is it featuring a particular model or a set of models? Is it modelling which leaves the student "passive" or is it modelling which allows the student to interact with the model and the teacher using the model?

(5) How do the users of the models come to understand the status of the models which they use? Do they hold the models descriptively or critically?

A comment from an economicst, Joan Robinson, one who knows the strength and weaknesses of models, provides a suitable way of concluding:

> Mathematical operations are performed upon entities that cannot be defined; calculations are made in terms of units that cannot be measured; accounting identities are mistaken for causal laws, differences are identified with changes; and one-way movements in time are treated like movements to and fro in space. The complexity of models is elaborated merely for display, far and away beyond the

possibility of application to reality [Robinson, 1979]

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An Educological Analysis of Curriculum Design

Laurie Brady
Kuring-gai College of Advanced Education
Lindfield, NSW, Australia

ABSTRACT

An inclusive model for curriculum development involves the developer following the curriculum elements, viz. objectives, content, method and evaluation, in any sequence, and making decisions about each by both drawing upon knowledge of the foundation disciplines (psychology, philosophy and sociology) and by appraising the situation. But the model cannot indicate whether there are particular commonly traversed pathways among the elements when developing a curriculum. Recent evidence indicates that content and not objectives is the common starting point for curriculum development; that a sequence of content, objectives, method and evaluation (C.O.M.E.) is the favoured progression; and that in moving to-and-fro among the elements, there are commonly traversed pathways.

Introduction

Tyler (1949), in developing a linear model of curriculum development, posed four often cited questions: What educational purposes should the school seek to attain? What educational experiences can be provided that are likely to attain these purposes? How can these educational experiences be effectively organised? How can we determine whether these purposes are being attained? These questions can be reformulated as the curriculum elements, or what Goodlad (1979) referred to as the "substantive elements" or "curriculum commonplaces," viz., objectives, content, method and evaluation. Goodlad claimed that they are basic to any conceptual system for the development of curriculum. Thus, in developing a curriculum, the developer must provide information in relation to each of the elements which can be easily interpreted and implemented.

This involves the developer in making a number of important decisions. Which curriculum element is to start the process? What sequence is to be followed among the curriculum elements? Such decisions involve the use of a curriculum model: a representation of the relationship between the curriculum elements in the process of curriculum design.

An Inclusive Model for Curriculum Design.

A model which subsumes all sequences followed among the elements in curriculum design (even the traditional objectives model), has been given the name of *the interaction* or *dynamic model* of curriculum development. It operates according to the following principles:

(a) The developer may begin with any one of the curriculum elements. Content or method may be preferred to objectives as a starting point.

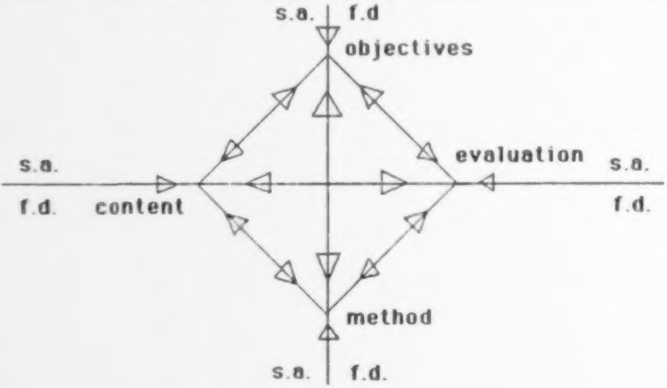
(b) The developer may follow any sequence among the curriculum elements, and move to-and-fro among them. If the developer wishes to follow a linear sequence, for example an objectives model sequence, such a sequence is allowed by the model.

(c) The curriculum elements are progressively modifiable. This suggests that a change made to any one element in the process of curriculum design, necessitates changes to other elements.

A model advocated by Brady (1987a) incorporates additional considerations to the curriculum elements. School based curriculum development implies a model which involves an analysis of factors which comprise the situation. Curricula must meet local needs, so situational analysis is the source of justification for determining the curriculum elements. Furthermore, the developer makes decisions by drawing upon a knowledge, however rudimentary, of the foundational disciplines (funds of knowledge) of philosophy, psychology and sociology.

The model is displayed in Figure 1.

Irrespective of the sequence followed among the elements, the developer must state clear objectives and select appropriate content, method and evaluation techniques. This selection is informed by a situational analysis and the contributing disciplines (funds of knowledge).



f.d - foundation disciplines (funds of knowledge)
s.a - situational analysis

Figure 1:
A Non-Linear Curriculum Model with All
Possible Sequences of Development and Decision Making

For example, if a situational analysis indicates a significant increase in the migrant composition of a school, this information is considered when examining each of the curriculum elements. The information may produce statements of objectives and content involving multicultural themes and both basic and enrichment language courses; teacher directed and behavioural methods may be adopted, and evaluation might include reinforcement to enhance self concept. Sociology might contribute by providing information relating to the socialisation of various migrant groups (structure and composition of the family, parental expectations, division of labour within the home, child rearing practices, etc). Psychology might contribute information on the impact of change on anxiety and motiviation, and language acquisition. Philosophy may contribute in the area of ethics and worthwhile intended learning outcomes. Although this inclusive model subsumes all models involving the relationship among the curriculum elements in the process of design, it does not indicate whether there are certain more commonly traversed pathways among the curriculum elements. All pathways are available, and all pathways may be traversed without any pathway necessarily being favoured over any other pathway.

Determining a Sequence

Two recent studies have shed light upon the question of which pathways and sequences are preferred by educational practitioners who engage in the curriculum development process.

The First Study. In 1981 the author conducted a descriptive survey to determine which sequence among the curriculum elements was preferred by teachers in planning mathematics and social studies curricula. The development of instruments to measure an objectives model (a non-linear model with all possible sequences as outlined in Figure 1), is reported in the first issue of this journal (Brady, 1987b).

When school means for the objectives and interaction models were calculated for each of the 20 sample schools, it was found that the scores for the objectives model and interaction model were not very different. There are two possible explanations. One is that individual respondents did not have widely discrepant scores (even though the models were different). If so, the finding suggests that respondents were drawing from both models, rather than using either in its pure form. The second explanation is that respondents within each school, either as individuals or groups, used a different curriculum model, and that scores for each averaged out across the school staff. If so, this finding suggests a number of models in operation, rather than a uniform school-wide model.

In ascertaining whether a high score on one model for an individual was associated with a low score on the other model, a program called Scattergram (Nie et al., 1975) was used. The correlation coefficient for mathematics was 0.15 and for social studies was 0.14, indicating that there was little or no relationship between the scores on the two models. This fact suggests that respondents used the two models eclectically.

The Second Study. To shed further light on the question of what sequence educational practitioners commonly follow among the curriculum elements when developing a curriculum, a second study was conducted at the end of 1987, involving 88 students in three different courses on curriculum design taught by the author: (1) 45 practising teachers converting an initial teaching diploma into a four-year Bachelor of Education degree; (2) 21 final year P. E. (secondary) students completing the four-year Bachelor of Education; (3) 22 graduates completing a secondary Diploma in Education. The students worked in small teams of no more than four to produce a curriculum worth 50 percent of the course's assessment. Ample flexibility of choice was given: (1) a subject for the junior or senior primary or secondary school; (2) an integrated field of study for the junior or senior primary or secondary school (for example, "Environmental Studies"); or an "approved" study for the senior secondary school.

Given the situation in which the author was teacher and researcher, the problems of controlling for researcher bias are acknowledged. However, in the instruction on curriculum design, no one model was endorsed by the author above another, and it was suggested to the students that curriculum development is often not systematic in practice. It was also indicated to the students that the important consideration within the process of curriculum development is achieving a demonstrable consistency among the curriculum elements.

The survey was conducted at the end of each course late in 1987, and the response rate was 100 percent. The instrument required respondents to (1) nominate their starting point for curriculum development, (2) show the sequence followed among the elements and (3) indicate movement to-and-fro among the elements. The first two tasks involved ranking numerically, but the third task allowed for responses of unlimited length and less structured responses.

Three Major Findings. Three of the major findings which emerged from the survey were that (1) content was the most common starting point for the curriculum development process, (2) three major sequences were followed in the curriculum development process and (3) the curriculum development process involved a variety of movements between the curriculum elements, with some pathways being traversed much more often than others.

1. Content was the most common starting point for curriculum development. Not only did 86.9 pecent of the sample begin with content, but the finding was consistent across all three groups, with no group scoring below 80.5 percent. Such a finding lends further weight to the widespread claim that objectives are rarely the starting point for educational practitioners. However, it should be noted that specification of objectives *was* the preferred beginning point for 13.1 percent of the sample, and these respondents all selected an objectives model sequence.

2. There were three major sequences followed among the curriculum elements. These three sequences accounted for 95.2 percent of the sample response. Data were obtained by asking respondents to rank from one to four the sequence followed among the elements. The three most commonly preferred sequences were (1) C.O.M.E. (content, objectives, method, evaluation), 51.2 percent of the sample; (2) C.M.O.E. (content, method, objectives, evaluation), 30.9 percent; (3) O.C.M.E. (objectives, content, method, evaluation), 13.1 percent. All three groups within the sample of 88 had the same order of preference, and there was very little difference between groups in the percentage distribution of those preferences. It is interesting to note that the researcher taught each group by treating objectives, content, method and evaluation in that order, but repeatedly indicated that such a treatment need not preempt the process of designing a curriculum.

3. The process of curriculum development involved a variety of movements among the elements with some pathways considerably more traversed than other pathways. Although a developer may deal substantially with one curriculum element before another, so that a sequence among the four elements can be identified, there is likely to be some movement to-and-fro among the elements. Respondents were asked to indicate how they moved to-and-fro among the elements. Given the great variety of possible responses and the unlimited length of response allowed, the difficulty of scoring such an item is apparent. However, the results were considerably less complicated than might have been the case because the students indicated only four most favoured pathways. In order of preference, they were (a) a movement from content to objectives, and repeated oscillation between the two, (b) a movement from content to methods, and a repeated oscillation between the two, (c) a movement from content to objectives to method and (d) a movement from content to method to objectives, with repeated oscillation among the three.

(a) A movement from content to objectives, with repeated oscillation between the two. The major preference of educational practitioners was to develop a conceptual framework for content, involving the selection of unit topics and their arrangement into more finite subtopics. Then the objectives were stated to clarify further the developing content selection. In this way, content and objectives were progressively modified, through oscillations between the two, before moving to method.

This favoured sequence could be interpreted as evidence of the problem suggested by Hall (1975) and Wise (1976) of treating ends and means separately. For example, if a teacher announces that she or he is to teach "World War I," that might be regarded equally as a statement of content (the means) and objectives (the end). In clarifying objectives, practitioners are further stipulating content, and vice-versa. Thus the movement between content and objectives is arguably more logical than that between content and method. Curriculum developers typically began by determining a conceptual framework. This is the product of brainstorming the relationship among facts, ideas and skills for the curriculum in question. Table 1 is typical of an initial conceptual framework. A unit on tennis within a physical education curriculum is used as an example.

Typically curriculum developers would then move to stating objectives to clarify their intentions and amplify their content. If the topic of "etiquette" has not been further elaborated in a specification of content (as in Table 1), developers might consider initial objectives such as "developing behaviour appropriate to being a good sport" and "developing conventionally acceptable court procedures." Developers would then elaborate the framework by adding content relevant to these general objectives, for example, accepting umpire's decisions, avoiding racquet and ball abuse, returning the balls to the server under the net, and shaking hands.

Table 1

An Initial Conceptual Framework in the Curriculum Development Process Using Content as the Starting Point

Content (expressed as topics and subtopics):

Topic	Subtopics	Subtopics	Subtopics
Tennis	**Rules**		
	Etiquette		
	Tactics		
	Strokes*	**Forehand**	
		Backhand	
		Volley	
		Lob	
		Smash	
		Serve*	**Aligning feet and shoulders**
			Ball toss
			Weight transference
			Contact at maximum extension

*Indicates topic to be elaborated in the adjacent column.

Thus content and objectives would be developed together.

(b) A movement from content to method, with repeated oscillations between the two. This second preference of curriculum developers was that of considering the interaction of "what" (content) and "how" (method) before the statement of objectives ("why"). This is not a surprising sequence in light of the fact that in some curricula, the methods are considered as important as the content. For example, units in health, social studies or personal development, involving role play, may be more concerned with the multiple perspective benefits of this method, than the particular subject matter of the role play. Curricula with a strong process emphasis may rely heavily on the detailing of learning experiences. Developers typically began with a conceptual framework, and then related the elaboration of facts, ideas and skills to a desirable range of learning experiences. Sometimes the specified learning experiences had implications for the further nomination of content.

For example, developers might develop a conceptual framework for a social studies unit on why we watch television, comprising the following contributing questions:

Why do you watch television?
What shows do you like?
What images or types of people does television present?
Is television the best form of entertainment?

Because within the curriculum developers' concerns and set of values a consideration of *how* a unit might be taught is of paramount significance, developers would then devise learning experiences. These might include the following: a discussion of viewing preferences; developing a graph of class responses; surveying other pupils and their families; roleplaying disputes over television viewing; classification of shows (educational, fantasy, drama etc); and reporting research on the modelling effects of television.

Such a detailing of method would typically lead the developers to amplify the selection of contributing questions to include:

What shows do different people like: boys, girls, men,

women?
Are some shows better for us than others?
What effect does television have on its viewers?

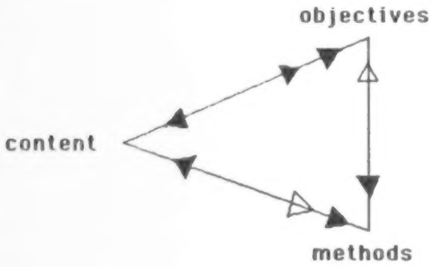
Thus content and method would be developed together

(c) A movement from content to objectives to method, repeated. Having determined the "what" of curriculum by selecting content and objectives, developers then selected methods and repeated the sequence, modifying the selection of each element.

(d) A movement from content to method to objectives, repeated. Having determined an initial conceptual framework and the methods necessary to teach it, developers then stated objectives and repeated the sequence, modifying the selection of each element.

A Model of the Three Major Findings from the Second Study

Figure 2 displays a model which represents the pathways



* The dark bold arrows indicate heavy flows of traffic in decision making within the curriculum development process; the light arrows indicate lighter flows

Figure 2:
Commonly Traversed Pathways in the
Curriculum Development Process

commonly followed by educational practitioners in the curriculum development process. The model is essentially the left half of the basic interaction or dynamic model. The starting point in curriculum development for 85 percent of the sample of practitioners was with content. The heaviest traffic in the development process was from content to objectives and back, and from content to method and back. Lighter traffic (i.e. sequence of decision making in the curriclum development process) moved along the track from objectives to method, and lightest traffic moved from method to objectives.

Conclusion

The findings from the 1987 study augment the information obtained from the initial 1981 study. They demonstrate that there is a preferred sequence followed by educational practitioners among the curriculum elements when designing a curriculum. Confirming the general belief that curriculum development is *not* an inflexible nor invariant sequence of decisions or even a systematic process, the study has implications for curriculum consultants and teacher educators (or teachers of educology).

First, teacher educators (or teachers of educology), in treating the topic of curriculum development might consider the wisdom of first addressing principles for the selection of content before treating principles for the selection of the other curriculum elements. Second, teacher educators (or teachers of educology) might rethink their teaching about objectives by exploring the relationship of objectives to content (rather than the reverse). Third, teacher educators (or educologists) might enhance their usefulness to students by providing concrete examples of how curriculum may be developed by traversing the more frequently used pathways among the four essential elements of curriculum design.

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International Journal of Educology, 1989, Vol 3, No 1

Book Reviews

***Education and the Process of Change.* *Ratna Gosh and Mathew Zachariah (Editors).* New Delhi/Newbury Park/London: Sage Publications,1987. Pp. 301. £19.00 (Stirling), hardback.**

Education and the Process of Change is a collection of papers selected from those presented at a conference held at McGill University in Montreal in June, 1985. The conference organisers aimed at "taking a comprehensive look at the role education has played in the reconstruction and revitalization of Indian society over the past four decades" (p. 9). Accordingly, the theme of the conference was "Education and Social Change in India: Reinterpretations and New Directions.

The conference papers included in this title are organised in relation to four themes: (1) structural constraints, (2) economic, scientific and technological issues, (3) strategies to overcome the constraints and (4) social change for cultural revitalisation. The section on structural constraints contains chapters which discuss education and elites in India, the administration of higher education in India, politics and social structure and education and social stratification. The second section has chapters which address the issues of education and economic growth in India and the implications of science and technology policy for quality education. Four chapters considering strategies to overcome the constraints on revitalising Indian education follow. These deal with the importance of female primary education for fertility reduction in India, child labour and education, women's liberation and the relationships among participatory research, educational experience and the empowerment of adults. The final part has chapters which treat the revival of Indian languages and indigenous systems of education and the implications of religious traditions for educational policy and practice. There is a concluding chapter containing theses, antitheses and syntheses.

This work is a mixture of perspectives. Parts of it are educology, while other parts of it are sociology, anthropology, economics and politics. Those parts of it which are educology are the chapters which focus upon features within Indian society which influence the educational process, e.g. Chapter 3 ("Administration of Higher Education in India"), Chapter 7 ("Science and Technology Policy in India: Implications for Quality of Education") and Chapter 13 ("Religious Traditions in Modern Indian Educational Policy and Practice"). The non-educological parts are those chapters which focus upon the instrumental value of education for transforming and improving Indian social and cultural relationships and political economy, e.g. Chapter 10 ("Education, Development and Women's Liberation") and Chapter 2 ("Reproduction or Change? Education and Elites in India").

Regarding the readership, educologists (and particularly those with an interest in comparative educology) and teachers of educology will find parts of this work of value. It will be of special interest to those for whom education in India and indigenous education are of a particular concern. In addition to educology, the title has appeal for readers, researchers, teachers and students interested in the sociology, anthropology, politics and economics of India.

Bevis Yaxley
University of Tasmania

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about the Educational Process
from an Educological Perspective

1989, Volume 3, Number 2

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning processes, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counselling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative) and empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding to serve several ends, e.g. to develop heightened sensitivity for educational situations, to enhance effective participation within educational situations, to articulate sound theory about educational situations and to resolve problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counselling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical; experimental and non-experimental; historical and philosophical; jurisprudential; interpretive, critical and evaluative; scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are published. Contributers seeking publication of manuscripts should submit an abstract (100 200 words) and four copies of the manuscript. If the manuscript is available on a 3 and one half inch disc for Apple MacIntosh (Macwrite), please send a copy of the disc as well. Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 inch) paper with uniform margins (3 cm or 1 inch, both sides, top and bottom). To ensure anonymity in the reviewing process, the author's name should appear only on a separate title page. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on the first page. The length of manuscript should range between 5,000 to 15,000 words. The bibliography should be arranged in this form: Author (date) Title. Place: Publisher. Referencing in the text should be in this form (Author, date: pages). Footnotes of explanatory text should be placed at the end of the text, but before the bibliography. Diagrams and charts should be camera ready for printing on offset.

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions. The educological perspective in discourse treats the educational process and its relationship to educational outcomes as the central concern of the problem being addressed in the discourse. The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic, empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions. The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process.

For authors seeking further guidance as to what constitutes educology and the educological perspective, two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C.: University Press of America, 1981) and in "Education, Educology and Educological Discourse: Theory and Structure for Education and Constructive Action in Education" by J.E. Christensen, *International Journal of Educology*, 1.1 (1987), 1-32.

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Guest Editorial

Are a National Curriculum and School Based Management Compatible?

Stuart Sexton

Institute of Economic Affairs, Education Unit

London, UK

Is it compatible to centralise and to decentralise at one and the same time? Does it make sense to try to do so? It is compatible to give professional teachers their freedom to teach, and then to lay down in detail what they should teach? Is it compatible to restore freedom of choice to parents and to their children, and then to impose a uniformity from which to choose? Are we in danger of interpreting freedom of choice in the way Henry Ford gave freedom of choice to his first customers -- you can have any colour of car you like as long as it is black. This is the kind of debate which has recently been pursued in Britain, and which has significance for other places where a national curriculum is being proposed (such as the USA, Australia and elsewhere).

The focus for the debate in Great Britain has been the "Education Reform Act" of 1988. The Act was introduced as a Bill to the British House of Commons in November, 1987, where it was debated, and slightly amended, in committee during the northern hemisphere winter months of 1987-88. It eventually emerged from the Commons just before Easter, 1988, and it went on to the House of Lords where it received a much more rigorous examination from their lordships. It become an Act of Parliament, in other words, became law, in July 1988.

The Education Reform Act has three main parts:

- The introduction, by law, of a "National Curriculum" for all the maintained (that is publicly funded) schools, together with children's assessments and the control of public examinations.
- Measures to decentralise or to devolve management to the schools themselves.
- Measures affecting the government and finance of polytechnics and universities.

An essential part of the Education Reform Act is that which devolves management to the schools themselves. The Act provides for:

- Financial delegation from local government to the governors and head teachers of the schools themselves.
- A provision for schools to have to admit pupils up to their full capacity rather than, as happens now, an arbitrary reduction of intake contrary to parental choice.
- The creation of "City Technology Colleges" (CTCs) which are very much a British kind of technological Magnet school, again Government funded schools but with independent school-based management.

And the key to the whole Act,

- opting out, that is a provision that publicly funded schools now

> under the control of the local education authority, analogous to local school districts in the USA, are free to opt out of such local government control and become independently managed, yet still remain publicly funded schools, funded through a per pupil payment coming directly from the central government at Westminster. They receive a per capita annual grant and thus are known as 'Grant Maintained' schools.

The Conservative Government under Margaret Thatcher have, since 1979, been pursuing twin objectives in education in the publicly funded schools, namely, 'standards' and 'choice'. By 'standards' is meant standards of achievement by the pupils, academic standards, quality of work, standards of behaviour and self discipline and so on. By 'choice' is meant choice, exercised by the parents on behalf of their children, of school, type of school and type of education.

Those two objectives, 'standards' and 'choice' are seen by the Thatcher Government as not only highly desirable but also as absolutely necessary goals in the schooling of our children. The highest possible standard of achievement for each and every child is seen as the objective of the exercise. In other words it is the Government's view that children should learn, should learn well and should learn both skills and knowledge to the maximum of the individual child's ability and aptitude. The maximum possible choice of school is viewed by the Goverment as a requisite parallel objective. If it is the parents' duty to educate their own children, or to see that they are educated, as the British believe that it is, (and not the State's) then it is the parents' right to be able to exercise that duty according to the parents' judgement as to what is best for their child, for their own particular child, and not for anyone else's.

However, the Thatcher Government has taken the argument further than merely asserting the value or desirability of standards and choice. The two, in the Government's view, are inter-related through the effectiveness and efficiency of free enterprise to provide goods and services.

The argument runs that parents *do* want the best for their children. They may not always be able to express that 'best' in terms of all of the educational jargon which we use, but parents, most parents, not all parents but most, can recognise a good school and good education when they find it, and they do seek out the best possible standards for their children. If, therefore, we allow the maximum possible freedom of choice of school, not only is that an inalienable right of parents anyway, but through the exercise of that choice, the parents' choices will in fact be a mechanism, an engine, to raise standards. Not all at once, of course, but over a period of time, the 'collective wisdom' of all the parents, seeking out the better schools, will result in the better schools prospering, and in other better schools being created, whilst the mediocre schools, which few parents will choose, will wither and die. In other words, there is, or there should be, a 'market' in education, in schools, and like any other market, both the quality and the quantity of schools' provision will respond to customers' demands, until a balanced market is reached in which the quality and quantity of schools available matches the demands of the consumers for that education, namely the parents and their children.

Since the late 1970s, the Conservative Government have been promoting policies and legislation in pursuit of the twin objectives of educational standards and choice within the context of the argument for the effectiveness and efficiency of a competitive free market system.

However, several flaws are apparent in the argument and the policy for provision of education through a competitive free market system. First is the matter of being able to achieve a state of affairs in which there is genuine free choice and unrestrained response to choice. It takes two sides to make a market, the suppliers and the consumers, and the interaction of supply and demand leads to the balance of both, but only if both suppliers and consumers are free to respond to changes in demand and changes in need. In Britain, not only has the freedom of choice of school, whilst better than it was, still been circumscribed for too many parents in too many parts of the country, but the schools have not been free to respond to that choice appropriately. The schools had not been adequately unfettered by the Thatcher Government and local authorities to conduct their management such that they could respond freely to parental wishes and students needs.

In addition, the Conservative Government had become increasingly impatient with the poor standards achieved by pupils (some even have said declining standards), in spite of ever increasing public expenditure per pupil on education. Professionals (i.e. teachers, administrators, counsellors, consultants, researchers) who are directly involved with the educational process know that merely spending more money does not necessarily buy better education. The money has to be judiciously spent in order to achieve effective and efficient delivery of education from the schools. Responsive and adequate allocation of resources requires a decentralised or devolved management which is directly in touch with the immediate needs and demands of pupils and parents. Under a system of devolved management, not only are schools in a position to respond directly to consumer demands, but they are also able to organise their resources much more effectively than happens with (as is now the case in Britain) several overlays of politicians and bureaucrats from local and central government. Under a decentralised system of management, it is reasonable to expect that, by the interplay of supply and demand, schools would be able to decide whether to be mixed or single sex; whether to be comprehensive or academically selective, whether to specialise in some subjects or not; whether to be Catholic or Church of England or Jewish or some other denomination; whether to adopt a particular ethos of sport or discipline or performing arts or music or whatever. Such a situation supposes not one kind of school, not uniformity, but a diversity of schools responding to a diversity of children and a diversity of needs.

Under the provisions of the Education Reform Act, governors and head teachers of schools are authorised to operate, to manage, within an overall budget which is established principally by the number of pupils who enrol in the school. They are able to increase the size of that budget only by attracting more pupils (they will not be able to charge fees). Within that overall budget, they have the authority to decide how best to deploy their resources of teaching staff, non-teaching staff, buildings, equipment, books, and so on. They are also free to compete with other schools.

Although I would say that the central part of the Education Reform Act does not go far enough towards the idea of devolved management, it certainly goes a long way towards it, especially with the proposals for financial delegation and that for opting out of local government control altogether. As such, I heartily welcome that part of the Act.

Is that, however, compatible with the imposing *by law* of a "National Curriculum" upon all publicly funded schools? (By the way, the mandatory requirements of the National Curriculum *do not* apply to the 7% of children in the totally independent non-government schools in Britain.) The first part of the new Act imposes what it calls a "National Curriculum." It specifies that there are to be "core" subjects and "foundation" subjects. The "core" subjects are to be mathematics, English and science. The "foundation" subjects are to be history, geography, technology, music, art, physical education and a modern foreign language (for children aged 12-16).

One might say, "fair enough," we expect all schools to provide such subjects, and we expect all children to learn them. But by specifying 10 essential subjects, one has claimed most of the time available in the school day and the school week. If each subject is given sufficient time to be taught and studied properly, then the Act has specified what is to be taught for about 85% of the school timetable. That leaves religious education (considered essential in the UK, and actually specified by law to be taught in all schools), economics, business studies, home economics, separate science subjects, a second modern language, classics and possibly many more desirable subjects for some of the children. Time for all of that must be found in the remaining 15% of the timetable.

The National Curriculum effectively removes many other highly desirable subjects from the options open to a child at any school. Besides decreasing the time available for options in the curriculum, certain provisions of the National Curriculum are educationally unsound. For example, it specifies that learning a modern foreign language should start at the age of 12; the educational research in learning a second language indicates that children should start learning a second language long before that. The Act even stipulates that the Secretary of State should decide what modern foreign language the children should learn, whereas it makes better sense to make several modern languages available in the different schools. The Act specifies "technology" as a free standing subject, whereas there is strong evidence to indicate that technology should be treated as an approach to education in skills which permeate much or even all of the school curriculum.

Over and above all of this, the actual *content* of the National Curriculum for each of these subjects is specified by central government authorities. The Act provides for the establishment of a "National Curriculum Council." This appointed Council is authorised by law to specify the actual content of the syllabus for each of the 10 "essential" subjects. For example, the Council has the authority to delineate what history should be taught, how history should be taught and what constitutes history. This is especially disturbing in the light of the fact, for example, that some of the "wet liberals" seem to think that history includes a very subjective assessment of current affairs. Similarly the Council has the authority to decide what constitutes physics up to the age of 16. Should the National Curriculum for physics, for example, include an understanding of magnetism and electricity; wave motions in light; wave motions in sound; the transference of heat, electro-magnetic radiation, mechanics and so on? For the more able children, it probably should include all of that, maybe more, and to some depth of understanding. For the average and lesser ability children, it may be pointless to pursue so much within the physics syllabus up to the age of 16. If it were left to "market forces," to the collective decisions of teachers and parents, then no doubt the curriculum for physics in the highly academic schools would be more advanced than that in the ordinary comprehensives, but in any case since there is never enough time in the timetable to teach, study and learn every aspect of physics at that age, given all the other subjects demanding the pupils' attention, some schools and some teachers pursue certain aspects of physics whilst others teach different ones. Such diversity is not only acceptable, but desirable.

Under an arrangement in which the curriculum is chosen not by market forces but by a committee of just 15 politically appointed persons, it increases the probability that a purely arbitrary choice will be made as to what aspects of physics will or will not be introduced to every English child up to the age of 16. Anything which the Council omits will be left out not just for some children but for all. Then again, suppose the 15 members of the National Curriculum Council decide that all English children should be taught not traditional mathematics but so called Nuffield mathematics. What a disaster that would be! Nuffield mathematics has its uses, especially for teaching mathematics in a generalised and simple way, but Nuffield mathematics is no substitute for traditional mathematics of algebra, calculus and so on, for those pupils intent upon studying mathematics or engineering at university. If a school or a teacher makes a mistake on choice of content, then at least they make it for a comparatively few children. If the National Curriculum Council makes a mistake, it makes it for the whole nation.

How can government in good sense, faith and conscience, devolve management to the schools, as the Education Reform Act provides, and then take away one of the essential management decisions of that school, namely what to teach? How can the individual school respond, through school-based management to parental demands, to parents' wishes, if the curriculum has been specified already, centrally, by some committee sitting in Westminster? I have no doubt that a school in Cornwall would seek to include some knowledge and understanding of the rise and fall of the tin industry in that county. After all the Romans once called those off-shore islands now known as the British Isles, the Cassiterites, after the Latin name for tin, because the major source of tin (for inclusion in bronze) for the Roman empire came from the Cassiterites. I have no doubt history in County Durham would include the local history of the coal industry or indeed the birth of the railways, and in North Wales, the once mighty slate industry is a source of local pride and local history. Is it proper and reasonable that some London based committee of academic worthies be authorised to decide such detail for all schools in all parts of the country? I sincerely hope that the Council does not exercise this authority, yet that is what is implicit in a National Curriculum set by a committee enforced by law. It is quite incompatible to give freedom of management and freedom of response to local demand, and then to superimpose a nationally prescribed curriculum.

Another feature of the Act which gives cause for concern is the provision for examinations. The Act places the central government in control of selection of public examinations which may be taken by pupils in the maintained schools at the age of 16, and again at 18. For example, the Secretary of State can prevent a student in an English school from taking a

Scottish GCE "O" (General Certificate of Education -- Ordinary) level examination and oblige the student to take the English GCSE (General Certificate of Secondary Education) instead. In a system which derives from market forces and provides freedom of choice, one might suppose it reasonable that teachers and pupils should be free to use their judgement as to which examinations to take, or not to take. Similarly, at the age of 18, whilst the custom in England is to take what is called the GCE "A" level examination (General Certificate of Education -- Advanced), there are those who prefer to assign their students the "International Baccalaureate" examination.

Now whether in the UK, or USA, or Australia, or anywhere else, is it right and sensible to devolve management, to delegate management, to the schools themselves? Is it right and sensible to allow the publicly funded schools, whilst continuing to be publicly funded with tax payers' money, to manage themselves, to act as "independent State schools" to use the Prime Minister's (Margaret Thatcher) expression. I believe that it is. I believe that *State funded education need not be State run education*. More important, I believe that it should *not* be State run education, that the schools should not be run by a massive network of politicians and bureaucrats, but rather that they should be independently managed, self managed, school based-managed. Such will deliver education to the children more effectively. Such will employ tax payers' money more effectively. Such will raise the standards of that education in response to the market of parental demand. Such will also, paradoxically, deliver a National Curriculum, if by the term *National Curriculum* is meant that body of knowledge and skills which most parents expect their children to learn at school. In other words, left to the free market, left to the interplay between governors and teachers on the one hand, and parents and children on the other, a consensus of what children should be learning will emerge, a basic body of information and skills will be taught in all schools by all teachers because that is what the great majority of the parents expect. Parents *do* expect their children to be taught good English. They *do* expect them to be numerate. They *do* expect them to have a sufficient knowledge of science. Most British parents, over 80% on a recent poll, *do* expect their children to be taught religion. They *do* expect a proper and sensible understanding of history and geography, literature, poetry and that great body of knowledge and experience from which the British culture and civilisation stems. And, left to the free market, they will get all of that. One has only to look at the totally independent schools in Great Britain, which do respond directly to their market, to discover a remarkable uniformity of curriculum, a uniformity born of a response to what parents demand. Parents do not expect their children to be taught unilateral disarmament under the guise of peace studies; nor do they expect the teachers to promote homosexuality in the classroom; or party politics, and, left to a free market, such subjects would not be taught, because too few parents want them. But, instead of allowing such a National Curriculum to emerge from the interplay of supply and demand, instead of that, the British government seeks to specify in great detail, by law, through Parliament, what children should be taught, and even if that is done benevolently and in the belief that the requirements are in accordance with parents' wishes, the government still thrusts the school curriculum into a strait-jacket. By doing so, they destroy the very flexibility of response which is essential for the continued development of the school curriculum. Governments, politicians and civil servants are notorious for waking up to current needs five or more years after everyone else. They destroy the initiative and professionalism which we need most from our teachers and our schools. To impose, by law, a National Curriculum is not only unnecessary, given the new found freedom of the schools to respond to the market through school based management; it is positively harmful: harmful to the proper and sensible development of a genuine National Curriculum; harmful to the need for diversity of provision to meet the diversity of children's abilities and aptitudes; harmful to the new found freedom to manage, implicit in the Education Reform Act, harmful to the responsiveness to local demand as to what local variations in the content of the school curriculum ought to be.

I would encourage educational colleagues in the USA, Australia, New Zealand and elsewhere to pursue freedom and independence of schools through more and more school-based management. That is the way to go; that is the way that education should develop. I would counsel very great caution, however, to any politician who might think fit to impose by law a "National Curriculum." In a free society, centralised control of curriculum is quite incompatible with principles of school effectiveness, efficiency, high standards and freedom of choice.

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An Educology of the Relationship Between Students' Perception of the Clarity of Examination Questions and Their Examination Performances: A Case Study of Nigerian B.Ed. Students

J. S. Aliyu
Institute of Education,
Ahmadu Bello University, Zaria, Nigeria

J. A. Adeloye
Advanced Teachers College,
Ahmadu Bello University, Kano, Nigeria

ABSTRACT

The following hypothesis was investigated: There is a significant relationship between students' perception of the clarity of essay questions and the quality of their performances on those questions. One hundred students from the Bachelor of Education (B.Ed.) student population of Advanced Teachers College, Ahmadu Bello University, Kano, were selected for the study. Two instruments were used to collect data. One was a set of six questions presented in the Sociology of Education paper (SOE) for the 1987 sessional examination. The second was a questionnaire which sought to identify students' perception of the clarity of the six questions. Results revealed significant differences in the students' perception of the clarity of examination questions and their eventual performances in response to the same questions. Findings suggest that it may be misleading to assume that the students' perception of the clarity of examination questions is a reliable indicator of the comprehensibility of those questions for the students. The investigators recommend some further analysis of perception, and they offer an explanation for the apparent disparity between students' stated perception and their actual examination performance.

Introduction

Over a span of 20 years, several educological studies have looked at classroom interaction and teachers' questioning techniques, types of examination questions and assessment (Flanders, 1970; Schofield, 1972; Kissock and Iyortsuun, 1982; Opara, 1984). One area which has attracted only limited attention is that of perception of understanding of examination questions by candidates. Some observers speculate that candidates' accurate perception could be equated to their correct interpretation of examination questions, which in turn, could radically affect their performance. No Nigerian study, to the knowledge of these investigators, has examined specifically the closeness or disparity between students' assumed perception of questions and their eventual performance on such examination questions.

Some researchers seek the task of classifying questions into types as a puzzling one. Kissock and Iyortsuun (1982) contend,

> It is difficult to distinguish affective questions from cognitive questions. This is partly so because each affective question has a cognitive part to it . . . affective questions focus attention on the individual and his/her opinion, feeling or belief about something.

Others have found the knottiness of questions to be tied basically to subjectivity in teachers' assessment. Schofield (1972) noted that teachers' marks "can be greatly influenced by personal feelings and preferences." In an attempt to reduce the abuses of subjective assessment, educologists and examination experts have evolved the objective type tests. In the words of Schofield (1972),

> The philosophy behind objective tests is that marks are awarded only on relevant grounds and that the marks are awarded in such a way that they cannot be influenced by the personal preferences and prejudices of the marker.

Several psychologists and educologists have stated that teachers at times see extenuating circumstances as factors guiding them in awarding certain marks.

Investigation into the influence exerted by students' expectations on their attainment have been largely experimental (Kohn, 1983; Okebukola, 1985; Ehindero, 1986).

Experience and comments have often revealed a wide disparity between students' perception about their own abilities and the eventual results in the respective courses. Frequently, students consider themselves to be "comfortable" with a particular course, only to bemoan their final grade on that same course. After several years of close monitoring of such seeming contradictions in perception of questions and actual performances, the present investigators decided on a systematic examination of the problem.

Aim of the Study

The study reported here aimed at identifying the relationship between students' perception of the clarity of examination questions and their eventual performance on those questions. The hypothesis tested in this study was whether there is a significant relationship between students' perception of the clarity of examination questions and their actual performances on the same questions.

Methodology

The six questions used for this study were those set for the final examination in the course, "ED202: Sociology of Education" (SOE) for the June 1987 Sessional Examination of Ahmadu Bello University, Zaria, Nigeria. The course (SOE) was compulsory for all Bachelor of Education (B.Ed.) Part II students, except for those students who were studying Physical and Health Education. The students selected for the study were B.Ed. students of the Advanced Teachers' College (ATC) of the Ahmadu Bello University (ABU) in Kano, Nigeria, and all of these students took the 1987 sessional examination. Out of the 106 questionnaires which were administered, 100 were correctly completed. The researchers accordingly ignored the uncompleted 6, and they based their findings on the data contained in the 100 accurately completed ones.

Two instruments were used for this study. The first was a questionnaire which aimed to investigate the students' degree of satisfaction with their performances, as well as their perception of the 6 questions on the SOE examination. The construction of this questionnaire was preceded by a preliminary survey of the reactions of 32 students who voluntarily visited the investigators. The investigators assigned values to the responses of these 32 students on each question. For uniformity of categories in the data, the ratings assigned to the 32 students' responses were identical to those on the questionnaire. Each of the 6 examination questions was rated by the students on a 5 point rating scale in relation to the following criteria and values:

Criteria	Rating
(a) extremely clear	- 4
(b) clear but overdemanding	- 3
(c) marginally clear	- 2
(d) not clear	- 1
(e) very unclear	- 0

The construct validity of the questionnaire yielded a value of 0.74, which was considered acceptable.

The other instrument was a record of the students' performances in their written essay answers to the 6 questions set in the SOE examination. The students' raw scores (a total possible rating of 25) were converted to percentages, and each question was then assigned a 5 point rating with the following values:

Raw score	Percentage		Rating
17.5 and above	(70% +)	-	4
15-17	(60-69%)	-	3
12.5-14.5	(50-59%)	-	2
10-12	(40-49%)	-	1
0-9.5	(0-39%)	-	0

Since the students were given options to choose any 4 out of the 6 examination questions, the number of those who attempted each question varied. In the end, 13, 64, 59, 68 84 and 90 students attempted Questions 1, 2, 3, 4, 5 and 6 respectively.

Since both the setting of the questions and the scoring were subject to external moderation, the researchers were satisfied with the level of face validity and interrater reliability (Carrol and Hall, 1985). Mean scores and standard deviations for subjects' perception of clarity of examination questions and their examination performances were compared, using the *t* test statistical technique with the probability level of 0.05 as the criterion of significance.

Table 1:
Mean and Standard Deviation of Students' Perception of the Clarity of the Essay Questions on the SOE Examination

Questions	Students' Rating					Mean	S.D.	N
	4	3	2	1	0			
1 Explain what you understand by Sociological method and give examples of how such a method can be applied in the study of education.	32	12	2	21	33	1.89	1.88	100
2 Critically examine both the manifest and latent functions of the school. Why in your opinion have parents reacted to this latent function?	71	20	4	4	1	3.56	0.83	100
3 The school as a social system cannot but generate series of conflicts between the insiders and the outsiders. Explain with appropriate examples some of the conflicts observed and the probable causes.	40	22	4	25	9	2.59	1.45	100
4 Discuss education as an agent of social change and give reasons why institutions and individuals resist change.	75	13	5	7	0	3.56	0.88	100

5. Explain the biological basis and aims of socialisation. Examine the role of the mass media as an agent of socialisation, highlighting the positive and negative influences on the child.	37	44	2	10	7	2.94	1.20	100
6. "Throughout the World, women are victims of educational inequality" (Blakemore and Cooksey, 1981). Discuss this opinion from the point of view of the Nigerian situation.	77	6	5	8	4	3.34	1.20	100

Results

A preliminary step was taken to find out whether the students were or were not satisfied with their performances in the SOE 1987 Sessional Examination. Results showed that only 16% were satisfied, 82% were dissatisfied, while the remaining 2% were undecided. Further investigation was made to assess the closeness between the students' levels of satisfaction and their stated degrees of perception.

Table 2:
Mean and Standard Deviation of Students' Observed Performances on Questions in the SOE

Questions	Rating					Mean	S.D.	N
	4	3	2	1	0			
1	0	0	0	0	0	0.0	0.0	13
2	1	13	12	17	21	1.31	1.18	64
3	0	2	2	9	46	0.52	0.71	59
4	1	18	9	15	25	1.34	1.27	68
5	1	29	15	26	13	1.75	1.31	84
6	0	8	19	36	27	1.09	0.93	90

The students' perception of the 6 questions as contained in Table 1 indicates that all except Question 1 were perceived as being clearly stated. If the findings which emerged in this table genuinely reflect the students' attitude towards the questions, it might be inferred that the face validity was high, except for Question 1. Table 2 shows the mean scores and standard deviations of students' observed performances in the 6 questions. Generally, the performances in all the questions were below average. This is contrary to the impression given by Table 1, since one would have expected correspondingly high mean scores on the students' performances.

Table 3 shows the mean scores and *t* test values of students' perception and observed performances on the 6 questions. There were significant differences in students' perception and their observed performances on all questions used for this study. Thus the hypothesis that

> *There is a significant relationship between students' perception of the clarity of examination questions and their actual performances on the same questions*

was rejected.

Table 3:
t Test Analysis on Students' Perception and Observed Performance on Questions on the SOE Examination

Questions	Students' Perception			Observed Performance			
	n1	x1	Sx2	n2	x2	Sx2	*t*
1	100	1.89	1.88	13	0.00	0.00	1.99**
2	100	3.56	0.83	64	1.31	1.18	13.24*
3	100	2.59	1.45	59	0.32	0.71	8.73*
4	100	3.56	0.88	68	1.34	1.27	13.88*
5	100	2.94	1.20	84	1.75	1.13	6.26*
6	100	3.34	1.20	90	1.09	0.93	13.24*

** Significant at 0.01 level of significance
* Significant at 0.05 level of significance

Against the background of the statistical outcome, the issue of perception of clarity needs to be briefly re-examined. As used in this study, perception is the understanding or comprehension of a question. Such an understanding should galvanise the student's mental disposition to enable her or him to respond satisfactorily to the given question.

Why the Disparity Between Perception and Performance?

A close look at the 6 questions showed that Questions 2, 4 and 6, with over 70% clarity rating, were perceived as "extremely clear." Further scrutiny revealed that these "popular" questions shared these features:

(a) they were all discussion questions;
(b) they all had two or more major parts to them;
(c) they all demanded some expression of personal views;
(d) they all had key words intended to guide the students.

In the students' minds, no particular attention seemed to have been paid to the special requirements of each of the three questions, despite the students' stated perceived clarity, which was expected to guarantee comprehensibility.

With Question 2, even though the first part mentions two kinds of functions, the second part of the question demands an assessment of parents' reactions to the latent functions of the school. Perhaps part of the wording of the question might have been misleading or unclear. The examiner might have intended a meaning something like,"*Why have parents reacted against this?*" [a negative reaction], rather than, "*Why have parents reacted to this?*" [a positive reaction]. The problem created by this kind of structure is that different students and in fact different examiners would have different interpretations of the requirements of the question This decreases the reliability level of the examination question

Question 4 could be described psycholinguistically as multi layered The educational process is to be discussed from at least three distinct but interconnected levels: (1) education as an agent of change; (b) why institutions resist [educationally induced] change, (c) why individuals resist [educationally induced] change. The students' answers which were reviewed confirmed that there was a serious gap between the students' assumed understanding and the actual depth of the question in (1) thematic and (2) semantic and syntactic dimensions

Question 6 had two main sections, each with subrequirements The first major section of the question was about educational inequality, and it had as its subrequirement the theme, "women as victims." The second major section of the question required a discussion of the issue from the Nigerian perspective.

For the students to attain a satisfactory performance on this question, they had to (a) weigh the word 'discuss' judiciously, since it implies here, as it frequently does, a balanced analysis of the specified subject, and (b) have been familiar with worldwide social situations, particularly within different cultures as they compare with the Nigerian situation

A further consideration of the sample of students' examination scripts indicated that even the most promising students answered only segments of the questions.

Overall, the meticulous reappraisal of the students' performances in Questions 2, 4 and 6 exposed these features (1) their misjudgement of the clarity of the questions; (2) their inability to distinguish substance from trivia; (3) their insensitivity to key concepts and operative words

An intensive survey of a sample of the students' examination scripts revealed different patterns of performance among students for Questions 1, 3 and 5 Question 1 was generally regarded as unclear by the students, and they mostly avoided it (only 13 students attempted it) The students' explanation that the question did not fall within the scope of the course was later confirmed by the course lecturer The students' general performance on this question was extremely poor Its inclusion is illustrative of one of the weaknesses of nonstandardised tests It lacked content validity.

Questions 3 and 5 required fairly straightforward explanation presentations A careful analysis of a sample of students' examination scripts with respect to Question 3 showed that (a) students fell back on recollections from their notes, however fragmentary, (b) they became mixed up with the substance and the sequence of their presentation, and (c) the syntactic makeup of the question appeared too complex for some of the students The relatively low quality of performance on Question 3, in spite of its apparent straightforwardness and clarity, was probably symptomatic of the students' generally low academic level.

Question 5 was unique in at least two ways It was clear and amplified. Perhaps the students were assisted by both the amplification of and some past familiarity with the given question On the whole, students treated this question well.

Generally, the features identified in the students' examination answers were in certain ways suggestive of weaknesses in the examiners' questioning techniques. All of the questions in the SOE examination paper were subjective or essay type questions. But only in Question 5 did the examiners give clear indications upon what the candidates were expected to focus. Several of the questions were presented in very broad terms, and some were presented with imprecise language. It was therefore not the students alone who contributed to the problem of question misinterpretation. The examiners themselves must share in the problem.

Conclusion

This study has investigated the relationship between students' perception of question clarity and performances on examination questions. The data have helped to warn against the dangers inherent in assuming that students' perceptions of clarity must genuinely reflect their performances in examination questions. Discussion with examiners and students and students' responses to the examination questions suggest that the causes of the lack of agreement might be found in such factors as the relevance of such questions to the course outline, the method of teaching, the availability of resource materials, the originality in students and a reasonable proficiency in language use.

Many of the students seemed totally uninitiated into the realm of ambiguous discussion questions where it makes good sense to write about both sides of an argument and to incorporate some well-informed personal opinion.

Experience has shown that most Nigerian undergraduates, like their counterparts in most countires, rely heavily on lecture notes for both assignments and tests. When questions are not based directly on their previous lecture notes, such students resort to padding their essays with irrelevant memorised (and not well understood) sentences, words and phrases.

In recent years in Nigeria, because of delayed commencement of terms and semesters and because of forced early closures of terms and semesters, effective academic work has been reduced by several weeks in a session. These developments have tended to curtail drastically lecturer supervised discussion, related in-class assignments and take home assignments.

Cognitivist educologists and psycholinguistic educologists have stressed that a minimum level of linguistic and nonlinguistic maturity are required for an effective handling of everyday language tasks. The students examined in this study seemed inadequate in these aspects. The chances are that comparable students in other cultures, especially the ones for whom English is a second language, would behave along similar patterns. As Bransford and McCarrell (1977) have noted,

> Comprehension results only when the comprehender has sufficient non-linguistic information to use the cues specified in linguistic input to create semantic content that allows him to understand.

Findings from the study confirm the nebulous nature of perception. The perceptions people have about others' statements or feelings are usually very personal and subjective. Yet, for examination questions in particular, clarity is essential. Perception by the students needs to be matched with clear language and directions in quetions. A careful and systematic analysis of what is perceived needs to be done by examiners before the questions are presented to students in the examination setting. For the development of examination questions, examiners could use the following guidelines to evaluate the adequacy of their questions:

(1) The language of the question: Is it ambiguous or nonambiguous? If ambiguous, how many interpretations are possible?

(2) The type of question: Is the question one of discussion or argumentation? Is it two-sided or multi-sided?

(3) The types of examples (if required): Are the examples to be local or universal? Are they to be statistical or historical?

(4) The personal view: Is the presentation of a personal view optional or compulsory for the question?

This study will need to be replicated under other situations to enable one to explain more exhaustively the lack of fit between students' perception of clarity of examination questions and their eventual performance on specific examination questions. In addition, more investigations need to be conducted to identify criteria which should be used to assess perception, particularly among students for whom English is a second language.

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An Educology of Instruction: Training Domain Specific and Strategic Knowledge

Patricia A. Alexander, Jonna M. Kulikowich and P. Elizabeth Pate
Texas A & M University
College Station, Texas, USA

ABSTRACT

A series of experiments were conducted to determine the effects of content and strategy training on the domain specific and strategic knowledge of primary school students (6th graders -- the 7th year in school of a K 12 system), secondary school students (the 9th grade or 10th year of school in a K 12 system) and university students in their first degree program (bachelor degree candidates). Content training focused on the domain of human biology and immunology, while strategy instruction dealt with the component processes of analogical reasoning. Each of these experiments is discussed in terms of instruction provided, the assessments conducted and the results achieved. Educological implications of this research for theory and practice in teaching and learning are presented.

Introduction

Cognitive knowledge encompasses a repertoire of facts and processes which range from the simplest declarative bits of information (e.g. dates and names) to higher order strategic operations (e.g. the monitoring of text comprehension). As educological theorists and practitioners, we have a responsibility to develop a better understanding of how this range of cognitive components, entailing content specific and strategic knowledge, are interrelated and integrated within and among learners. This understanding has the potential to promote the design of instructional models of learning which can address the needs of learners with varying competence levels and of diverse experience or cultural backgrounds (Alexander and Judy, in press; Garner and Alexander, in press). Furthermore, when-instructional models of learning can become well systematised with specific goals and objectives, we can use the outcomes of such intervention to help discern what makes some students more able than others. In essence, we can begin to articulate a theory of academic learning which accounts for the existing knowledge structures of learners

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and their strategic processes.

To understand what characteristics of cognitive instruction may help define and address the needs of all children will require several arduous analyses and experiments. The dynamic, ever changing nature of cognition is hardly predictable. Yet, as several eminent educologists (e.g. Dewey, 1966, and Polya, 1957) have noted, we hope that all our students can be able problem solvers and not mere fact bearers. More recently, Glaser (1984) has stressed that instruction should lead students to better thinking and reasoning, as well as engaging them in the refinement of basic skills.

Of course, some curriculum developers and practitioners remain ever faithful to the behaviourist theories of Skinner and Thorndike, who have reduced mental faculties to a string of stimulus-response connections (Willson et al., 1988). However, Ksatona (1940) emphasised that the development of thinkers and reasoners requires much more than a focus on specific content stimuli or specific learner responses. Thus, instruction should not promote drilling sessions which strengthen connectionist behaviours, but rather should foster the development of cognitive organisational structures. These structures should help students learn to acquire and organise information and should engage them in strategic efforts which enrich their knowledge bases by looking for similarities and differences between content knowledge and problem solving procedures.

The present investigation is designed to be educological in nature. That is, the main objective of this research is to introduce knowledge about the teaching and studying process as it relates to cognitive training employed to better the performances of primary school students (6th graders -- the 7th year of school in a K-12 system), secondary school students (9th graders -- the 10th year of school in a K-12 system) and tertiary students (first degree university students -- bachelor degree candidates) on science and analogy tasks. More specifically, this analysis embeds a praxiological approach. By a praxiological approach, we incorporate Christensen's definition (1981) of knowledge about effective practice in instruction which can maximise the probabilities of learning of some intended skill, principle or concept. Our focus centres on instruction which relates to what several cognitive theorists refer to as "domain specific" and "strategic knowledge."

Alexander, Pate, Kulikowich, Farrell and Wright (in press) distinguish between these two forms of cognitive knowledge, but stress that it is essential to understand how they interact. It is the thorough understanding of this interaction which appears to be most effective in devising instruction to meet learners' needs. As they are interpreted from the cognitive literature, domain specific or content knowledge involves the schematically held information which the learner possesses relative to a particular discipline, field of study or fund of knowledge (Alexander and Judy, in press). It therefore entails declarative knowledge (knowing what), procedural knowledge (knowing how) (Ryle, 1949) and conditional knowledge (knowing when and where) (Paris, Lipson and Wixson, 1983).

Strategic knowledge comprises those operations required to monitor, regulate or manipulate information (Flavell, 1981; Garner, 1987). We view strategic knowledge to be a special case of procedural knowledge.

Furthermore, we judge, as do others (e.g. Brown, Campione and Day, 1981; Garner and Alexander, in press) that strategic knowledge involves mental effort, intentionality and willfulness on the part of the learner. To illustrate, we can provide an example from the fund of knowledge which constitutes mathematics. A student may be taught to implement an algorithm for long division (procedural knowing). However, unless the student can employ that algorithmic knowledge under circumstances which vary to some degree from the trained context (e.g. the mathematics worksheet), then we would not consider the knowledge to be strategic.

It is also important to emphasise that strategic knowledge can exist separately from a specific content domain. Pressley (1986) has referred to these processes as "across domain" or "general strategies." As we interpret it, general strategy knowledge applicable across many domains (e.g. text reinspection, summarisation, analogical reasoning) can be activated by an understanding of the general processing demands of a range of tasks, rather than by conditions unique to a particular content or problem type, as in the case of content specific strategies (Rabinowitz, 1984).

From a praxiological standpoint, the current investigation is unique in several ways. First, it has sought to provide learners with explicit instruction in content and strategy knowledge based upon sound theories and upon an understanding of learners' pre existing content and strategy competence level. Second, in this study, there was a marriage forged between instruction and assessment. Historically, when determining the effects of training, researchers have had to rely on instruments which either broadly measured cognitive ability, such as standardised intelligence and aptitude measures, or narrowly tested for specifically trained behaviours (Garner and Alexander, in press; Paris, Cross and Lipson, 1984). In either case, the potential effects of the training are only incompletely measured. Thus, for this investigation, we spent a year developing cognitive instruments which not only corresponded to the goals of the training, but also afforded us the opportunity to examine more far reaching effects of the interventions. Finally, from a more statistical standpoint, we employed analyses of our data which permitted us to look at the effects of training ipsatively (i.e. within individuals), as well as collectively (i.e. between individuals). Consequently, these statistics enabled us to determine the impact of the training programs both globally, in terms of total test scores, and specifically, in terms of individual performance profiles.

To test our educological hypotheses about the relationship of content and strategy knowledge to academic learning and to assess the effects of instruction on that relationship, we undertook three experiments. The experiments occurred at the primary, secondary and university levels, and they involved the transmission of human biology, human immunology and analogical reasoning information. It is our intention to summarise the results of those experiments as they pertain to a praxiological view of learning. An examination of the three areas, as previously described -- training, assessment and evaluation -- will serve as the organisation for the remainder of this research report.

Training

As others in the area of cognition and learning have stated, it is essential that effective training be theoretically sound, age and ability appropriate and durable. In this investigation, we sought to devise two complementary training programs which possessed these characteristics. Not only did we structure the content of these training programs around specific theories, but we also utilised a model of direct or explicit instruction (Doyle, 1983; Duffy, 1981) to transmit that content.

The Direct or Explicit Instructional Model.

The explicit instruction was employed to maximise the effectiveness of content delivery. Although alternative forms of instructional delivery (e.g. discovery, guided learning) were considered, we chose a direct or explicit instructional model for the following reasons. First, others have suggested that an explicit instructional approach may be most effective in those circumstances where the information to be transmitted is novel or complex for the students involved (Judy, Alexander, Kulikowich and Willson, 1987). We concur with this perspective. Second, as Doyle (1983) noted, when the cognitive processes to be instructed are well delineated and are amenable to systematic organisation, a direct instruction model would seem most appropriate. Again, we concur.

Each of the training programs was conducted in three 50 minute sessions. The sessions were held on consecutive school days, and they were delivered to 25 to 30 students. In accordance with the explicit instruction model, all training sessions were teacher directed. We began each session with an introduction or preview and concluded each with practice and review. These steps ensured greater time on task and student engaged learning time (Rosenshine, 1983). In addition, each training session involved the explanation of key terms, concepts and processes and group and independent practice with corrective feedback (e.g. Duffy, 1981; Rosenshine, 1983). The training programs were also scripted to ensure content coverage and fidelity of treatment, and they were coordinated with visual aids, such as overhead transparencies and practice cards.

The Content Training.

Of the content domains available to us, we chose human biology and human immunology for several reasons. These domains are well systematised, a factor which contributes to their teachability. Also, it was expected that primary, secondary and university students would have had some exposure to these domains during formal schooling and would have acquired some knowledge in these areas. In primary school at the 6th grade level (the 7th year of school in a K-12 system or around the age of 12 years), the focus of our content training was in the domain of human biology, while human immunology was the domain chosen for the secondary and tertiary (university) levels.

Regardless of level (primary, secondary, tertiary), our domain specific training was based upon the schema theory of knowledge structures (Anderson, 1977). A *schema* according to Anderson is a modifiable information structure which represents concepts stored in memory. A schema, therefore, is a structure of interrelationships among objects, systems, situations, events and sequences of events which normally occur in our everyday experiences. As we conceive it, schemata in the domains of human biology and human immunology are generally formulated around well delineated systems and the components of those systems.

Furthermore, human biology and immunological elements are rather hierarchically related. Human beings are constructed of systems which are built upon organs, which in turn are built upon tissues, which likewise are built upon cells. The schema for the human body is composed of subschemata (or embedded schemata) for systems, organs, tissues and cells. We used this hierarchical, schematic structure of human biology and immunology as the framework for our content training program to enhance its organisation and memorability. In addition, the human biological and immunological systems and their related components were presented in the instruction in terms of their descriptions, forms and functions (Carey, 1985).

For the primary school (6th grade) content training, we focused on three principal systems: the digestive, circulatory and respiratory. We used 6th grade science textbooks to help us in the preparation of the three 50 minute sessions and to ensure high content validity for the training. In the first session, we introduced students to the concept of a system and related body systems to schools systems. We then described the digestive system in terms of its parts and their functions. By following a bite of hamburger through the digestive process, we illustrated the workings of the system. At each point in the digestive process, we located, defined and described the principal organ (e.g. mouth) and related it to the components of that organ (e.g. saliva, salivary glands, enzymes, pharynx).

In the second session, we focused on the circulatory system and described the functions of the blood, blood vessels and the heart. We used a replica of the heart to illustrate the organ, and we made simulated blood from karo syrup, pearl tapioca, red hots candy and clear jelly beans. For independent practice, students were asked to identify each of the key components of the circulatory system and to match it to its function. In the third session, we taught the students about the respiratory system and used a detailed diagram to illustrate it and its related components (e.g. the diaphragm, trachea, epiglottis and bronchia).

In the secondary school domain training, we chose to focus on two systems which appeared most relevant to human immunology: the immune system and the lymphatic system. Following a brief review of other systems of the body, we concentrated our efforts on locating, identifying and describing each of the principal components of the immune and lymphatic systems. As in the primary school program, each of these components was characterised in terms of its form and the function it served within the overall system. In the content training for the university students, we modified instruction slightly in that we focused exclusively on the immune and lymphatic systems and provided more elaboration. For example, while we mentioned leucocytes in both the secondary school and university training, we described more of the formation, functions and abnormalities of leucocytes with the university students.

The Strategy Training

The theoretical foundation for the strategy training in the current investigation was Sternberg's (1977) componential theory of analogical reasoning processing. According to Sternberg, components are the basic elements which underlie human cognitive performance. Although various theories of analogical reasoning exist (e.g. Case, 1985; Holyoak, 1984), we found the componential approach effective in several regards. To begin with, the componential theory is a well-tested model of analogical reasoning which has been successfully employed in a number of previous studies (e.g. Alexander, White, Haensly and Crimmins-Jeanes, 1987; Alexander, Wilson, White, Willson, Tallent and Shutes, 1987; White and Alexander, 1986). In addition, the specific performance components of encoding, inferring, mapping and applying afforded us the well delineated and systematic means of explicitly training primary, secondary and university students to reason analogically. Finally, these four performance components served as a mechanism for linking strategy and content knowledge, since common analogies exist within the domain of science (e.g. the heart is like a pump). As applied to the science analogy problem, logs : cabins : : bones : ?, the four components can be described as follows:

Encode - The identification of the characteristics or salient attributes of each term in the analogy problem. Logs, for example, can be described as segments of trunks or large branches which are cut and prepared for building, while cabins can be characterised as structures which are sometimes built of logs;

Infer - The process of formulating a relationship between the meanings the first and second terms of the analogy problem -- Logs are building components of cabins (a part to whole relationship);

Map - The generation of a relationship between the first and third terms of the analogy problem. Logs and bones are both strong supporting structures which are usually tubular in shape. However, logs are parts of trees, while bones are parts of the human body;

Apply - The determination of an appropriate response by the application of all previously formulated relationships. Skeleton would be an appropriate response to the given analogy problem because it is constructed of bones in the same manner in which cabins are composed of logs. Logs and cabins represent the part-to-whole relationship in an out-of-science domain, while bones and skeletons have a similar relationship in the domain of human biology.

In the first session of the 6th grade (primary school) strategy training, we selected four instructional activities: (a) to introduce the term 'analogy', (b) to explain what analogy problems are, (c) to name and describe the component processes of analogical reasoning and (d) to assign students the task of solving nonverbal analogy problems by applying those component processes. All the analogy problems used in the first session were of the form A : B : : C : ?. For group practice, we presented pictorial and geometric analogy problems on 8 and one half inch (21 cm) by 19 and one half inch (49 cm) cards so that the terms could be displayed one at a time. The related processes could then be extensively rehearsed. A worksheet containing similar problems was used for independent practice.

Following a review, we began the second session with an explanation and modelling of the component processes with verbal analogies (e.g. pistol : holster : : airplane : ?). With this exception, the format for the second session of strategy training was similar to that of the first. We focused on analogies in diverse forms in the final session. Examples of matrix analogies and analogies embedded within paragraphs were presented and used as the basis for instruction. To conclude the strategy training, students generated and shared their own A : B :: C : ? analogy problems.

For the strategy training at the secondary school and university (tertiary) levels, we employed the same instructional materials used in the primary (6th grade) training, although the order of presentation differed and the card sets were eliminated. In addition, because of scheduling difficulties, strategy training for high school and undergraduates was restricted to two sessions. We focused our instruction in the first session on the application of the component processes to verbal analogy problems of the form A : B :: C : ?. In the second session, following a brief review, we explained the nature of these component processes as they apply to (a) nonverbal analogy problems of the A : B :: C : ? format, (b) matrix analogy problems and (c) text based embedded analogies.

Assessment

Training programs which are educologically appropriate must be carefully developed in order to address the existing competencies of the learners to whom they are applied. We wanted to have sensitive research instruments available to us which would permit us to track the direct and the transfer effects of our training. Because of the central role which they played in this research, we will briefly describe these instruments by category (domain, strategic and interactive) and by grade level (primary, secondary and university). Following the overview, we will characterise the students who participated in this research program.

The Assessment Measures.

The competent use of a specialised set of terms has been judged to be an effective indicator of one's content knowledge (Freebody and Anderson, 1983). Thus, we devised alternate forms of a multiple choice vocabulary test to assess domain specific knowledge in the funds of knowledge of human biology or human immunology for each of the three levels of students.

Domain Knowledge Test. In creating all domain knowledge tests, we compiled a set of human biology and immunology terms and their definitions from leading textbooks. We then submitted this set and the corresponding test items to a panel of content experts to judge their appropriateness and accuracy. Interrater agreements among the experts for all rating tasks were above 0.74 for all domain tests. The internal consistencies for all forms of the domain test for all grade levels, as measured by the Kuder Richardson (KR-20) procedure, were at least 0.61.

It was our goal in domain test development to maximise the information which we could collect about individual students and treatment groups. Items for each grade, therefore, were generated to conform to specific response models based on the schema theoretic notion of knowledge structures (Anderson, 1977). The model of best fit for each level of student was derived from extensive pilot testing. For example, the 6th grade model incorporated the correct human biology option, an incorrect option also from human biology, an incorrect option from a science field which was not human biology and an out-of-science option.

Each of the areas from which the response options was drawn (i.e.

human biology, science, out of science) represented specific related knowledge structures or subschemata. Human biology, for instance, can be described as a subschema of the broader domain of science, which in turn is a subschema of one's out of science knowledge. By fitting our items to such a model, we could analyse changes in the frequency of correct responses for each learner as a consequence of training, and also measure any modifications in subject response patterns which might occur as a result of increased content knowledge (Kulikowich and Alexander, 1988). A sample item from the 25 item human biology test of the 6th grade is provided as follows:

Sample Item from the Domain Knowledge Test (6th Grade — Primary)

1. Carpals are
   - a. the small bones of the wrist [correct, human biology]
   - b. the muscles of the foot [incorrect, human biology]
   - c. types of fish found in streams [incorrect, science]
   - d. groups of people who travel to work together [incorrect, out of science]

To measure domain specific knowledge at the secondary school level, we generated a 25 item vocabulary measure with terms taken from the domain of human biology, but with particular emphasis on the immune and lymphatic systems. Sample items from the secondary school domain knowledge test and their corresponding response option model are provided below:

Sample Item from the Domain Knowledge Test (Secondary School)

2. A hapten is
   - a. a small cell of the immune system [correct, human biology and human immunology]
   - b. a filter tube of the kidney [incorrect, human biology and immunology]
   - c. a large antler of a deer [incorrect, biology]
   - d. the negatively charged portion of an atom [incorrect, science]

At the university level (bachelor's degree students), we constructed alternate forms of a 30 item domain knowledge test from terms drawn from the field of human immunology. As can be seen in the sample item below, the model for the construction of the response options represented a closer fit between the subschemata. The model required greater discrimination for the older, and supposedly more knowledgeable university students.

Sample Item for the Domain Knowledge Test (University Students)

Hemopoiesis is the
- a. generation of human blood cells [correct, human immunology]
- b. blood infected by the AIDS virus [incorrect, human immunology]
- c. study of the circulatory system of amphibians [incorrect, biology]
- d. physical force which attracts neutrons to electrons [incorrect, science]

Strategic Knowledge Test. To measure strategic abilities with minimal influence from learners' existing content knowledge, we administered a test composed of figural matrix analogy problems to the primary, secondary and university students. Since these figural analogies required the application of the componential processes in the absence of written language, we judged that it was an appropriate measure of strategic knowledge. The strategy test for 6th graders (primary students) incorporated 20 items taken from the Advanced Progressive Matrices, or APM, Sets I and II (Ravens, 1958, 1962). All 12 items from Set I were used along with 8 randomly selected items from Set II. In our judgement, this modification was justifiable because we were only interested in students' raw scores and not in normative data. For our older subjects, we randomly selected an additional five problems from the APM Set II to add to the 6th grade test. This change in the number of items was the only modification made at the secondary school and tertiary (university) levels. The reliabilities for the primary, secondary and tertiary level strategic knowledge tests were 0.70 or better.

Interactive Knowledge Test. Finally, to assess the interaction of domain specific and strategic knowledge, we developed a science analogies measure to serve as our interactive knowledge test. The interactive knowledge test was composed of analogies of the form A : B : : C : ?. Terms in each of the problems were drawn from the human immunology corpus used in the development of the domain knowledge test. Specifically, for the majority of these problems, the missing D term was one of the vocabulary words included in the domain knowledge test. It seemed to us that a test constructed in this manner would involve both domain specific and strategic knowledge, since it required not only the ability to reason analogically but also an understanding of scientific terms. Thus, we refer to this as an "interactive knowledge test."

As with the domain knowledge test, we submitted all analogy problems and responses to content experts (i.e. university and secondary school science instructors) to verify their accuracy. The resulting interrater reliabilities were above 0.70 for each of the 30 item interactive knowledge measures. Internal consistencies for all interactive knowledge tests were 0.72 or higher. Sample items from primary, secondary and tertiary level measures follow:

Sample Items from the Interactive Knowledge Test

(Primary School -- 6th Grade)

1. MUCOUS : RESPIRATORY SYSTEM : : SALIVA : ________________
2. CONTROL TOWER : AIRPORT : : NUCLEUS : ________________

(Secondary School -- 9th Grade)

1. RED BLOOD CELL : ERYTHROCYTE : : WHITE BLOOD CELL : ________
2. PAGES : BOOK : : AMINO ACIDS : ________________

(University)

1. NEUTROPHIL : GRANULOCYTE : : LYMPHOCYTE : ____________
2. DISEASE-CAUSING : PATHOGENIC : : CANCER-CAUSING ________

The Students

The initial phase of our training occurred in primary school at the 6th grade instructional level (approximately 12 years of age). Since our previous research had focused on students with perceived instructional needs, we chose to train only low knowledge 6th graders, i.e., those with limited content or strategy knowledge. Our sample included 121 students (55 females and 66 males) from a South Central school district (an administrative unit within a decentralised school system) in Texas. All of these students had been identified as low in either domain knowledge, strategic knowledge, or both on the basis of our assessment instruments. We used a performance criterion of minus one half of a standard deviation (-1/2 SD) below the sample mean on our domain specific and strategy measures to indicate low knowledge. Those students who scored at or below this level only on the domain specific knowledge test were the low content subjects. Those who scored similarly only on the strategic knowledge measure were the low strategy subjects, while those who scored at or below the criterion level on both measures were categorised as low content and low strategy subjects. Students in each category were randomly assigned to either treatment or to control. While those in the treatment groups received explicit instruction in their area(s) of weakness, control subjects took part in regularly scheduled classes.

We expanded the scope of our training at the secondary school and university levels to determine the effects of training on students who were low, average and high in content or strategy knowledge. For these older students, we used +1/2 SD or more on either the domain or strategic knowledge test as the criterion for high knowledge, -1/2 SD or less on either test as representative of low domain or low strategy knowledge and between -1/2 and +1/2 SD as indicative of average domain or strategy knowledge. At these upper grade levels, we also administered our training to intact classrooms to avoid scheduling problems.

Students taking biology at a high school (9th grade or approximately 15 years of age) in the same school district as the 6th graders served as our secondary school sample. The 188 students (99 males and 89 females) were in 16 classes, 3,of which were randomly assigned to domain training, 3 to strategy training, 2 to doman and strategy training, and the remaining classes to control. As our university sample, we selected 132 education (educology) majors who were enrolled for their first degree (the bachelor's degree) in five sections of a reading diagnosis and remediation course. With only a few exceptions, the students had completed an introductory biology course. Almost all of the students were female. Of the five university classes, one was randomly selected to receive domain training, one, to receive strategy training, and one, to receive both domain and strategy training. Two of the classes served as controls.

Evaluation

To understand the effects or our training on students' content and strategy knowledge, we administered our assessment measures prior to and following the explicit instruction. We then undertook both quantitative and qualitative analyses of these data. That is, in analysing student performance on the three assessment measures, we performed the more typical omnibus tests, including multivatiate and univariate analyses of covariance, as well as post hoc comparisons. In addition, to enhance our understanding of training effects, we also performed more qualitative analyses of tracking changes in students' response patterns on the multiple choice domain knowledge tests via log linear categorical modelling. We generally wanted to determine two things by these analyses.

First, we wanted to know whether our explicit instruction produced overall treatment effects on the knowledge measures a between group issue. Second, we were interested in determining whether changes could be evidenced in terms of shifts in students' error patterns: a within individual issue. Also of interest to us was the influence which age and existing knowledge competence levels had on students' receptivity to training in human biology and immunology or analogical reasoning. The details of these statistical analyses are reported elsewhere (Alexander et al., in press). Thus, it is our intention here to summarise those analyses and to frame them within a discussion of their implications for a praxiological view of content and strategy training.

Primary School (6th Grade)

With the 6th grade sample, we found that treatment had an effect but only as it relates to the acquisition of content knowledge. Students low in content knowledge who received training and those who were low in both content and strategy knowledge who received training showed the anticipated gains in performance scores on the domain knowledge tests. Their error patterns also demonstrated that even when the students did not select the correct response, they more frequently chose an option which was within the target schema of human biology.

However, the growth which was anticipated on the strategic knowledge and interactive knowledge tests did not occur with the low knowledge 6th graders. Why was this the case? We had carefully constructed instruments which would gauge student understanding, and we had administered strategy training which had proven to be effective in several prior studies. Yet, only changes in domain knowledge were achieved. In light of the findings for the 6th graders, several explanations seem plausible. The first relates to the instrumentation. The second pertains to the overall competence level of the group. The third concerns student motivation. The final explanation pertains to the relationship of domain specific and strategic knowledge to their respective training programs.

First, the test which we employed to measure strategic knowledge, as we stated, was composed of items from the Advanced Progressive Matrices. Prior to training, low strategy students were able to answer correctly fewer than 7 items out of 20. Even after explicit instruction, these students answered fewer than 8 correctly on the strategic knowledge test. This suggests that the items on the strategy test may have been too complex for these young students. For younger, less able students, a less demanding measure of strategic knowledge may have been more sensitive to training effects and thus more suitable. An alternative explanation relates to what Swing, Stoiber and Petersen (in press) describe as a requisite knowledge level needed for effective training. In their cognitive training study, when the group's competence level was low, no significant effect for strategy training was achieved. Swing et al. reported that this finding could possibly be the result of low teacher expectations or classroom management concerns. In our study, all 6th graders who took part in the research were of low competence. Thus, this low group competence level may have negatively influenced our ability to train analogical reasoning processes effectively.

A third explanation also relates to the composition of our 6th grade training groups. As the instructors in these classes, we found that the students in this sample conveyed a reluctance to participate in the training. Several of the students reported that they felt they had been included in this study because they were "stupid." Overall, the motivation of the students who were trained was, in our estimation, quite low. Therefore, in addition to low cognitive competence, it is possible that our 6th graders were also low in motivation and that this condition significantly influenced their willingness to acquire or to utilise the strategic knowledge which we presented.

Finally, our difficulties in training strategy knowledge in low ability 6th graders may also be a reflection of the rather direct correspondence between domain specific knowledge and content training; a relationship which is not shared by strategic knowledge and strategy training. With content training, the domain specific knowledge for which we trained was directly related to the knowledge we assessed. If students learned the form and function of elements of the digestive system, for example, it was that information which appeared in some recognisable form on the domain knowledge test. With strategic knowledge, this relationship between process and performance was more obscure. Students were taught the underlying component processes of analogical reasoning, but there was no direct correspondence between what was taught and what was tested. These students were not asked to name or to describe those component processes, but to apply them in the solution of nonverbal and verbal analogy problems.

One of the most perplexing findings of this experiment has to do with those students who received two trainings (i.e. those treatment subjects who were low in both content and strategy knowledge). Statistically, one would anticipate that students who received explicit instruction in domain specific and strategic knowledge would have been doubly blessed and would, consequently, have a significant advantage over those participating in one or no training program. In reality, the reverse seems to have been the case. In examining our posttest scores, particularly for the strategic and interactive knowledge tests, we determined that our content and strategy training group was negatively affected. What reasons may account for such a disappointing and unexpected finding? In retrospect, we would offer two explanations: one cognitive and the other affective in nature. From a cognitive perspective, it may be, as Alexander and Judy (in press) have speculated, that learners must have a base of domain specific knowledge before they can benefit from strategy instruction. Provision of both trainings simultaneously to these low competence students may have only served to confuse rather than to enlighten them. From an affective standpoint, it may be that, for students who were generally unwilling to participate in training, the requirement to attend two training sessions instead of one may have compounded their negative motivation.

Secondary School

As you will recall, the makeup of our secondary school sample was different from that of the 6th grade sample on several dimensions other than age. The secondary school students who participated in our research were of mixed competence, for instance, and they received their instruction during their regularly scheduled biology periods. These factors would seem to have influenced the results of our content and strategy training in several ways.

The effects of training on the domain knowledge test illustrate this point. Even though our secondary school students (a) received their instruction in only two sessions rather than three, (b) were confronted with more specialised content and (c) were administered a test with more tightly structured distractors, they performed significantly better on the domain knowledge test than did the 6th graders. With the secondary school sample, we also found that the acquisition of domain specific knowledge was reflected in students' error patterns, as well as in their correct responses. That is to say, for our trained high school students, significantly more of their incorrect responses came from the target domain of human biology and immunology than for the control subjects.

Another interesting effect from the training of these older, more experienced students was the presence of a strong gender by treatment effect on the domain knowledge test. What we found was that our male students at this level performed best on the domain test when they received both content and strategy training. The secondary school females, on the other hand, performed best when given only content training. We interpret this interaction to mean that secondary school males receiving content and strategy training utilised their understanding of analogical reasoning to generate conceptions of relationships within the trained content information. This utilisation of analogical reasoning strategies in combination with newly acquired content may have resulted in more integrated knowledge structures which were more accessible for these male students. The females, by comparison, may have perceived the acquisition of content information more as the accumulation of scientific terms. Thus, the exposure to strategy training would have proven of little assistance to them in the memorisation of the science vocabulary.

We found positive effects for training in the students' performance of the strategic knowledge test, as well. Posttest scores on the strategic knowledge test were significantly higher for those given strategy training than for those not given this training. As with our 6th graders, we did not see the expected benefit for receiving both content and strategy training among our secondary school students. However, unlike our 6th graders, these older students did not seem cognitively or emotionally overwhelmed by the dual training sessions, as evidenced by their improved performance (albeit a nonsignificant improvement).

Strategy training was also effective in enhancing students' performance of the interactive knowledge test. In this instance, we determined that the only significant difference which existed between treatment groups occurred with those given only strategy instruction versus those who received training only in domain specific knowledge. Because it is a test which requires scientific knowledge, in addition to an understanding of analogical reasoning processes, it would have seemed that the receipt of content instruction would have been mirrored in an increase on the interactive knowledge test. It might be that explicit instruction in the component processes of analogical reasoning may have helped students access existing knowledge structures better and thus generate the necessary relations required of the science analogies. For our generally more knowledgeable high school students, improved performance on this science analogies test may have been more dependent on accessibility versus availability of the required content (Rabinowitz, 1988).

University Students (First Degree Students)

As with the secondary school students, the university students showed positive effects for content and strategy training. For example, university students receiving content instruction alone or in combination with strategy training scored significantly higher on the domain knowledge test than did those students receiving only strategy training or no training at all. Moreover, all trained students did significantly better than control students at selecting answers on the domain knowledge test (whether correct or incorrect) of human immunology. It would appear therefore that explicit instruction in either domain specific or strategic knowledge enabled these more experienced students to narrow their options on the multiple choice, domain test to those alternatives within the area of human immunology.

In contrast to our findings at the secondary school level, however, we found no effect for strategy training on the strategic knowledge test, although the means were in the expected direction. Several circumstances may have mitigated against such an effect. First, we observed that the pretest means for the strategic knowledge test for our university students were higher than that for our secondary school sample. As Swing et al. (in press) and others have noted (e.g. Rogosa, Brandt and Zimowski, 1982), the higher the initial competence of the individual, the smaller the expected gains. This may be the case for our more capable university students. Second, our university sample was composed almost exclusively of females. In the secondary school study, we found that gender was a potent factor in assessing training effects. As we mentioned previously, the secondary school females were more receptive of domain specific training than they were of strategic knowledge training while the males showed substantial performance gains as a result of strategic training. Therefore, what results may have been achieved at the university level for a sample consisting of more male subjects remains in question.

Training was also effective in improving university students' performance on the interactive knowledge test. Those students given content training and those given content and strategy training significantly outscored all other students on this test. The differential performance patterns on the interactive knowledge test between high school and university students may be analysed in several ways. We might argue for instance that the university students were more strategically competent than the high school students, as witnessed by their pretest scores on the strategy knowledge measure. This developmental increase in strategic competence may have contributed to the treatment differences on the interactive knowledge test. It is also possible that the university students have had more exposure to verbal analogy problems like those contained on the interactive knowlege test, such as on the Scholastic Aptitude Test (SAT) -- an admission requirement for many American universities. Perhaps this greater familiarity with verbal analogy problems enabled these university students to exemplify better utilisation of content and strategy training than secondary school students.

But why was strategy training effective at improving university students' performance on the science analogy problems, but not on the figural matrix problems which comprised the strategic knowledge test? One explanation may be that the figural matrix analogies represent much more novel, and, therefore, more demanding tasks for these students. It could also be that the females in our undergraduate sample were more capable at utilising their strategic knowledge when confronted with a verbal reasoning rather than a nonverbal, spatial reasoning task (Maccoby and Jacklin, 1974).

Conclusions and Implications

When considered from an educological perspective, what do the results we have just reported tell us about the effectiveness of training to enhance students' domain specific and general strategic knowledge? More specifically, what implications and suggestions can be offered so that instruction may become more efficacious in developing classrooms where students have the content and strategic knowlege needed to become thinkers and problem solvers rather than memorisers and fact bearers? In our judgement, the overriding contribution of this research was that we forged a theoretical connection between instruction and evaluation. Indeed, we embarked on this research venture with theoretically based, instructionally appropriate training and assessment materials and procedures which we had carefully constructed for this purpose. We not only articulated what we conceived to be a cognitive theory related to the types of knowledge possessed by learners, but we also have made a practical effort to design instruction models and assessment measures in accordance with what we theorised to be the essential features of such knowledge bases. By generating this theoretical link between instruction and assessment we can more effectively address their relationship to one another and to the learning process.

Praxiologically speaking, we conclude that the relationships between instruction, learning and assessment lack one to one correspondence and can vary greatly for students of various ages and competency levels. That is, the information which is delivered in the classroom is not equivalent to the information integrated into knowledge structures. Nor is the information which is transmitted to students synonymous with the information over which they are evaluated. Certainly these proclamations are not new, but the findings of this research have corroborated them.

For instance, our results have illustrated to us that the path between teaching and learning is always precarious. Furthermore, this path is sometimes obscured by students' limited knowledge, their misconceptions about the nature of schooling or knowledge acquisition, their low achievement motivations, if not by the poor or misguided instruction which they receive. Even when you approach the instructional journey, as we did, with the highest of expectations and with what you consider to be the best of materials and strategies, you can occasionally find yourself waylaid. Several of the effects for training which we had hypothesised failed to materialise, and other effects for training which we had not anticipated emerged. Despite these miscalculations, or perhaps because of them, we came to realise that those who seek to intervene in students' learning in order to enhance the students' knowledge base must carefully survey the instructional environment in terms of learners' existing competence, motivation and gender.

More specifically, from our findings we would draw the following conclusions about the impact of explicit instruction on students' base of content and strategy knowledge.

1. If there is an overall low level of competence among those to be trained, then the effectiveness of instruction can be significantly hampered. As with the research by Swing et al. (in press), our findings suggest that instructional programs which deal with complex cognitive abilities, such as analogical reasoning, may require a minimal level of group competence before effective implementation is possible. Yet, once effectively implemented, it is the lower competence students who have the most to gain. This finding has implications for the homogeneous grouping of students of low ability when improvement in strategic knowledge or high level thinking skills is an instructional objective.

2. The base of requisite knowledge may change as one advances through the grade or year levels. When we examine the pretest performance of our primary school, secondary school and university students, we find that the core of content and strategy knowledge available to these individuals increases as a consequence of age and experience (i.e. even without the benefit of explicit instruction). What secondary school students know about human biology and immunology is substantially greater than what upper primary students (6th graders) know, but it is less than the knowledge possessed by university students. This is true not only for content knowledge, for which classroom instruction is provided, but also for strategy knowledge, for which direct or explicit instruction is conspicuously absent (Paris et al., 1984).

3. Gender may have a significant effect on the outcome of content and strategy training, particularly in relation to older students. Our analysis of the data for secondary school students revealed that males and females, at that level, reacted differently to our training programs. The females showed a preference for instruction which focused exclusively on content knowledge, while males performed best when that content knowledge was transmitted concurrently with strategic information. At the university level, as well, where the sample was composed almost entirely of females, we found that analogical reasoning training was translated into improved performance on verbal analogy problems but not on a test constructed of figural, matrix problems. Others have proposed verbal and spatial distinctions between males and females (Maccoby and Jacklin, 1974), and gender differences as related to the integration of scientific content and procedures (Burbules and Linn, 1988). The results of our own research seem to provide some support for such proposals.

4. Strategic knowledge was more difficult to impart than was domain specific knowledge. Even for students who were low in competence, it was possible to achieve significant growth in content knowledge via an explicit instruction model. This was not the case for strategic knowledge, which remained elusive on several occasions. This difficulty in producing significant effects in students' strategic knowledge may be attributable to certain factors inherent in the nature of strategy knowledge and in the

nature of schooling. First, as we noted, there is no direct correspondence between strategic knowledge and strategy training, as there can be for domain specific knowledge and content training. Any test of strategic knowledge must be by definition a measure of transfer. Furthermore, the nature of strategic knowledge requires a willingness or purposefulness on the part of the learner. A learner may have strategic knowledge but never choose to employ it (Rothkopf, 1988). This situation may help to explain the problems we encountered in working with the low competence 6th graders. It seemed to us that their lack of willingness to learn or to employ the strategic knowledge we presented them contributed to the ineffectiveness of strategy training at that level.

As it pertains to schooling, strategic knowledge and its instruction has long taken a backseat to domain specific knowledge. In many ways, schools see their job as one of the transmission of content knowledge. Thus tasks involving the acquisition and utilisation of domain specific knowledge are more familiar to students than are tasks based on strategic knowledge. The novelty of this knowledge, therefore may have added to the difficulty we experienced in teaching the general strategy of analogical reasoning.

5. Although we considered strategic knowledge much more difficult to transmit instructionally than content, we did observe what can be regarded as an "optimal instructional range" for strategy training. This means that general strategy knowledge was more effectively transmitted at some age levels as opposed to others. At the lower end of the range were the low competence primary pupils. They seemingly lacked an adequate base of content knowledge to use strategic knowledge. At the other end of this optimal instructional range were the university students. They had a moderate competence in general strategic processing which they seemed unable or unwilling to abandon. Between these two points were the secondary school students. They appeared to have enough of the requisite domain specific knowledge which could complement additional strategic knowledge gained from instruction. Moreover, their strategic routines had not become too rigid or resistant to change, thus they represent the centre of this optimal instructional range.

We were also interested in examining the relationship among what is taught, what is learned and what is assessed. Assessment is a critical component in any attempt to enhance knowledge, since assessment serves as a window onto the knowledge structures which remain hidden from direct view. We took great care in developing theoretically sound and practically valuable assessment instruments. Our efforts at evaluation have provided us with valuable insights into the triadic relationship of teaching, learning and assessment, and we offer the following recommendations for evaluation and assessment procedures.

1. There should be more evaluation instruments which reflect cognitive information processing theory. The relationship among teaching, learning and assessment will remain obscured as long as the theories which drive them conflict. Cognitive and information processing theory has become the vanguard for current research activities in the areas of teaching and learning. However, traditional behavioural and psychometric theories continue to guide the development and analysis of measurement tools (Willson, in press). For measurement to gauge changes which occur in cognitive structures or information processing (either as a

consequence of maturation or direct intervention), it should logically manifest a cognitive theoretical perspective, as well

2. Tests should be devised to maximise the amount of information garnered from students' responses. At present, most assessment measures which evaluate learners' existing knowledge base do so in a dichotomous manner; that is, they tell us only whether an answer is correct or incorrect (Thissen and Steinberg, 1984). In addition, it is assumed in such a binary analysis that incorrect answers provide little or no useful information. As others have suggested (e.g. Alexander, Willson, White and Fuqua, 1987; Kulikowich and Alexander, 1988), and as shown in the current investigation, wrong answers on a cognitive test do not generally result from random selection. Rather, they more often arise from thoughtful though misguided effort. They are thus indicative of students' incomplete or inaccurate understandings. Should those in measurement and instruction learn to harness the information contained in all responses, whether correct or incorrect, students' abilities could be more effectively diagnosed and educationally treated.

3. Typically cognitive measures have been constructed to evaluate the domain specific knowledge of learners (Tatsuoka and Tatsuoka, 1982; Webb, Herman and Cabello, 1986). If we are to address the cognitive strategies and processes of learners, then we should be as concerned with the measurement of strategic knowledge as with the assessment of domain specific knowledge (Embretson, 1984). Furthermore, in evaluation, there is little acknowledgement of the interactive role of domain specific and strategic knowledge in the performance of many complex cognitive tasks, such as verbal analogies. For the purposes of this research, we have made a conscious attempt to employ cognitive measures which were focused on strategic knowledge with minimal influence for domain specific knowledge and to devise a test which represented the interaction of content and strategy knowledge. As a result, we have a better understanding of what primary, secondary and university students know about human biology and immunology and about the processes involved in analogical reasoning. Also, we can speak to the way in which they employ both content and strategy knowledge in the completion of interactive knowledge tasks.

If the purpose of American public schooling is to assist in the development of independent thinking and well informed citizens, as we believe that it is, then instructional efforts must be directed toward the acquistion and utilisation of both domain specific and strategic knowledge. As we have seen in this investigation, the effective transmission of content and strategy knowledge is never a simple process but is often an elusive one. Yet, we have also come to realise that when we approach the instructional venture equipped with both well organised training procedures and statistically sound and sensitive instrumentation cast within a clearly articulated theoretical framework, then we are more likely to realise that elusive goal; and it is a goal worthy of such endeavours.

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An Educology of Children's Humour: Characteristics of Young Children's Expression of Humour in Home Settings as Observed by Parents

Doris Bergen
Miami University
Oxford, Ohio, USA

ABSTRACT

This study was designed to examine the spontaneous humour expressed by children in their home settings, as observed and recorded by their parents. Observational records were collected by 65 parents whose children ranged in age from 14 months to 84 months. The examples of humour were described and information about the physical settings, social context and accompanying child and adult behaviours was reported. A wide variety of humour types were exhibited, including expressions of joy in mastery play, humour responses to and performance of incongruous actions, and initiation of interactive "preriddle," conventional riddle and joking behaviours. Analysis of cognitive stage level showed that age was significantly related to the cognitive score derived from the humour examples, with older children having higher cognitive scores. Gender showed no relationship to cognitive stage score. Analysis of psycho-emotional stage scores showed no relationship to age or gender. The humour corpus was described for the entire sample and for a subgroup composed of records for which more than 10 humour examples were returned by parents. In the subgroup analyses, boys had significantly more hostile humour examples than girls. Other age and gender comparisons were non-significant. Questions for further study were generated from the research results.

Introduction

Parents and teachers have often noted that young children express humour in varied ways at different ages. However, the systematic study of children's humour development has only begun to receive attention since a number of theories of humour have been linked to children's cognitive and social/emotional development (Chapman and Foot, 1977; Freud, 1960; McGhee, 1971). Characteristics of children's humour have been described by researchers using experimental designs which require children to respond to humour or explain why riddles or jokes seem funny to them (e.g. Bowes, 1981; McGhee, 1971; Pien and Rothbart, 1976; Shultz and Horibe, 1974). Observations of the spontaneous humour exhibited by children in school and playground settings have also been gathered by a number of researchers (e.g. Canzler, 1980; Groch, 1984; McGhee and Lloyd, 1982).

Information gained from these various studies indicates that there are stages of humour expression which parallel stages of cognitive development (McGhee, 1971; Shultz, 1972), that boys are more likely than girls to initiate and respond to humour in non-home settings (McGhee, 1976), that both genders understand and can explain the point of incongruous humour at about the same age levels (Yalisove, 1978), and that there are individual differences in humour expression and appreciation levels (Brodzinsky & Rightmyer, 1980; Carson, Skarpness, Schultz, & McGhee, 1986).

Adults' own experiences with humour make them aware that setting variables (i.e. the formality or informality of the environment, the familiarity and friendship status of the participants) have an influence on how much or little humour is expressed and on the nature of that humour. Studies of behaviour which elicits laughter in infants when performed by the parents but distress when performed by a stranger (e.g. peek a boo) give evidence that humour expression in young children is strongly affected by the trust level surrounding it (Sroufe and Waters, 1976; Fogel, 1982). Thus, it might be expected that young children's humour expressed at home will be somewhat different (e.g. more extensive or of different character) than that exhibited in experimental or formal school settings.

The humour which children of various ages express at home has not been systematically described. This is at least partially due to the fact that it is difficult to design an observational system which is unbiased. For example, because of the comfort level required for humour expression, the presence of unfamiliar observers in the home may change the nature of that expression. In the home setting, parents' observations may be able to describe more accurately the characteristics of their children's humour. If one were to ask a set of parents what objects or actions strike their children as funny or what kinds of riddles or jokes their children enjoy, most of the parents would be able to give examples. Whether the examples which parents notice are representative of the entire range of their children's humour behaviours or are selectively perceived is, of course, difficult to evaluate.

However, because so little is known about the development of humour and its relationship to other areas of development and because there are not always opportunities for children to express humour in school or in other organised activities, this study was designed to gather initial information about the kinds of humour which parents notice children exhibit at home. Comparisons of the congruence of the study results with other humour research using different methodologies and descriptions of the setting variables and social interactions which accompany home expressions of humour may give educators and educologists information about the processes of humour development and the ecological variables which encourage its expression. The results may thus be useful in extending knowledge about the educational processes which affect humour development and expression, and also it may provide valuable knowledge about how humour influences these educational processes.

Objectives

The objectives of the study were as follows:

1. To collect descriptive information about young children's spontaneous

expressions of humour in their home environment (as observed and recorded by their parents).
2 To compare this information with that reported in studies using other settings and observers.
3 To examine possible age and gender differences in humour expression.
4. To generate questions for further study.

Methodology

Subjects

The total sample of subjects included 65 children in the age range of 14 months to 84 months whose parents were asked to record examples of the humour their children expressed during a four week period or until 20 examples were collected, whichever came first. Approximately 100 parents agreed to collect examples, however, observations were returned for only 65 and half (33) of the observational records which were returned contained fewer than 10 examples. Children from Maine, Massachusetts, Connecticut, Michigan, Wisconsin, Kansas, Missouri, Florida and California were included in the sample.

Of the 65 records returned, more were completed by parents of girls (41 girls; 24 boys). The mean age of girls was 55.1 months and of boys was 56.5 months. In the 32 subject group for which more than 10 examples were recorded by parents (mean number of examples = 16.7), there was an equal number of boys and girls (16:16); the age range was 18 months to 84 months; and the boys' average age was higher than the girls' (mean for males = 61.4 months; mean for females = 51.8 months). General descriptive data are reported for the entire sample; analyses of particular characteristics and selected statistical comparisons of characteristics by age and gender are reported for the total group and for the 32 subject group for which over 10 examples were recorded.

Data Collection Method

Parent participation was solicited primarily through preschool and kindergarten teachers (14 teachers). In a few cases a participating parent solicited one or more other parents to participate in the study. Parents who agreed to participate were given copies of a form on which to write examples of the humour they observed, along with information about the setting and circumstances accompanying the humour example. A letter explaining the procedures to follow and a list of sample items were also included. A copy of these materials is appended.

Directions to the parents stated that they were to record examples of what their child thought was funny (not what the adult thought was funny) and that they should collect up to 20 examples over a period of two to four weeks. At the end of four weeks (or earlier if the 20 examples were already collected), the parents were to mail the observational records to the researcher.

Data Categorisation and Coding

After the collected examples were returned, the characteristics of the humour examples were categorised using adaptations of criteria used by a number of other humour researchers (Bowes, 1981; Canzler, 1980; McGhee and Lloyd, 1982; Krough, 1985; Shultz, 1974). Examples were coded on the

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following variables: humour type (e.g. incongruous actions, word play, riddling patterns), physical setting (e.g. the kitchen), social setting (e.g. siblings present); initiator of action (e.g. focal child or other person), humour behaviour signals (e.g. laughter) and nature of non-human stimuli (e.g. household object, television).

The number of repetitions of the same humour behaviour and the number of extensions or elaborations of the humour were also noted. When adults were recorded as participating in the exhibition of child humour, the nature of their interaction (i.e. non-playful reciprocal or playful) was coded. The cognitive and psycho-emotional developmental stage levels, based on the stages described by McGhee (1977) and Freud (1960), were also coded. Because of the variety of parental recording styles, which made interpretation of some of the examples difficult, the agreement among the three coders ranged from 75% to 98% on the categories. Overall agreement was 84%.

After coding, mean scores on children's cognitive stage levels (McGhee, 1977) and psycho-emotional levels (Freud, 1960) were derived by multiplying numerical weights (1-4; 1-3) for each stage level by the number of examples. These scores were used to test the theoretical assumptions of Piagetian (as interpreted by McGhee) and Freudian analyses of humour development. The Piagetian-based theory of McGhee posits that children's increasing cognitive ability to perceive incongruity is the basis of humour development. In the first stage, children find incongruous actions toward objects humorous (about age two). In the second stage, they find incongruous language and labeling of objects and events humorous (age two to four). In the third stage (age four to six), they consider conceptual incongruity as humorous, and in the fourth stage (about age six or seven), they understand and enjoy humour with multiple meanings.

Freud has posited that children's emotional development is tied to their humour, with the first stage being "play" in which incongruity of objects, words, and ideas are noted (about age two to four) and the second being "jesting" (about age four to six), in which they begin to use some joking techniques. The third stage, appearing at about age seven, is the "joking facade" stage, which marks the use of humour to disguise hostile and sexual elements within an "acceptable" context. In this analysis, the cognitive and psycho-emotional derived scores were used to test whether the children in this sample did show the age-related differences in their humour development which these theorists have suggested.

Method of Analysis

Frequencies of categories were compiled for the full group of 65 and separately for the 32 children in the subgroup having more than 10 examples. Descriptive profiles of the total group and the subgroup were developed. Means, medians and percentages were used to explore whether differences in the humour corpus were readily apparent for the subgroup of children whose parents recorded a greater number of examples. Chi Square statistical tests were performed on the nominal data for the subgroup. The derived scores for the subgroups' cognitive and psycho-emotional level were examined through correlational measures. These scores for the total group were also examined through a two-way (age and gender) analysis of variance.

Results

Description of the Humour Corpus for Total Sample

The 65 parents most often recorded observations which were coded as (a) performance of incongruous or fantasy actions (72.3% had at least one example of this type); (b) discovery and expression of humorous reactions to incongruous or fantasy actions, objects, events (66.2% had at least one example), and (c) expression of joy in mastery or movement play (56.9% had at least one example). Table 1 gives the humour type categories, an example of each humour type, and the percentage of records with at least one reported example of that type of humour.

Table 1
Percentage of Records with One or More Examples in the Coded Humour Categories

Subject N - 65

Humour Category/Type	Examples	Percentage of Records with at Least One Example
Expressed joy in mastery and movement play	Tickling games, tag or other chasing; trial and error actions/manipulative play	56.9
Clowning	Making faces, very exaggerated movements of voice, with child monitoring of "effect" on "audience"	33.8
Verbal or behavioural teasing	Provoking actions or words, such as calling "Silly Billy," or repeatedly grabbing and returning sibling's possession	40.0
Discovering incongruous objects/actions/events	Observing and reacting with surprise and laughter to a picture of a dog wearing a baby bonnet	66.2
Performing incongruous actions/pretend/fantasy	Rolling up a red placemat and pretending to eat this "Fruit Roll"	72.3
Sound play	Chanting or singing nonsense words such as "boola, goola, boobie"	43.1
Reproduction/elaboration of story/song/poetry patterns	Repeating song "Peanut Butter," then changing and singing "Tuna Butter"	43.1
Word play with multiple meanings	Saying, "I can play the piano 'by ear' and then putting ear to keys and	24.6

	banging out sound	
Describing impossible events or incongruities	Telling "tall tale" about being a giant and eating all the food in all of the stores in town	49.2
Riddling patterns or "preriddles"	Asking, "Why does the chair cross the room?" and giving the answer, "To be a baby."	26.2
Conventional riddling	Asking, "How does Santa Claus clean his yard?" and answering, "Ho, ho, ho!"	24.6
Joking or playing jokes	Putting candles which won't blow out on a birthday cake	10.8
Self disparagement or displacement	After making a mistake in a game, saying, "My brain is still on vacation," or laughing at own mistake	6.2

The majority of parents observed at least one example of humour at each time period: morning (81.5%), afternoon (78.5%) and evening (84.6%). The settings where examples of humour were most likely to be noticed were the kitchen (73.5%), the living/dining/family room (72.3%), the bedroom (50.8%) and the car (49.2%).

Mild laughter was observed in 96.9% of the humour records; strong laughter was observed in 43.1%. Other reported humour behaviour signals were movement exaggeration (66.2%), vocal/verbal exaggeration (44.6%), and facial exaggeration (36.9%). Child explanation of the funniness of the humour occurred in only 7.7% of the records. Child repetition or elaboration of at least one humorous behaviour or language example occurred in 93.8% of the records.

Siblings were present when some of the examples were recorded for 69.2% of the children. Although human beings (both adults and children) were the major elicitors of humour, other stimuli included household objects/food/clothing (66.2%), play materials/toys (55.4%) and TV/video tape/movies (49.2%).

Adult involvement in the humour was highly evident: adult reciprocal interaction was described in 90.8% of the records, and genuine adult playfulness was described in 80%. Reciprocity was evident on the child's part also, with 89.2% of the records showing humour initiated by the child and 86.2% also showing child response to humour initiated by other people or to media (e.g. television).

In general the picture presented by the total group observational records showed that the humour noticed by parents occurred as the family went about its usual activities and that the presence of the family members often served to elicit and sustain the humorous interactions.

In order to test whether the theoretical assumptions of McGhee were demonstrated in the total group sample, a two-way Analysis of Variance (age and gender) of the derived cognitive stage level score was performed. The ANOVA showed a main effect for age on the cognitive stage score ($F_{2,61} = 13.49$, $p < .01$). The cognitive score was significantly higher at older ages. There was no main effect for gender, and there were no significant interactions. A similar test of the Freudian psycho-emotional humour stage levels was also performed. That ANOVA was non-significant for both age and gender.

Description of the Humour Corpus of the Subgroup

Because of the variation in number of examples provided by parents, the subgroup which had more than 10 examples recorded by the parents (mean = 16.7 examples) was analysed separately, and the data were compared to the characteristics found in the total humour corpus. The data for the subgroup were similar in most respects to those of the total sample.

The most often observed humour types were: (a) performing incongruous or fantasy actions (93.7% of the records included at least one example), (b) discovering and showing humour reactions to incongruous or fantasy actions, objects or events (75% had at least one example) and (c) expressing joy in mastery or movement play (65.6% had at least one example). The majority of children described impossible events and conceptual incongruities (e.g. tall tales), with 65.6% of the records showing this type of example. The majority of children also reproduced humourous story, song or poetry patterns (noted in 56.2% of the records) and engaged in verbal teasing (noted in 53.1%). The types of humour requiring understanding of multiple meanings (e.g. riddles, word play) were represented in about 30% of the records, but true jokes were noted in only 15.6%. The percentages, means and medians for the subgroup are shown in Table 2.

Table 2

Means, Medians and Percentage of Records with One or More Examples in the Coded Humour Categories

Subject N = 32

Humour Category/Type	Mean Number Per Record	Median Number Per Record	Percent of Records with at Least One Example
Expressed joy in mastery and movement play	2.8	2	65.6
Clowning	0.6	0	43.7
Verbal or behavioural teasing	1.2	1	53.1
Discovering incongruous objects/actions/events	2.7	2	75.0
Performing incongruous actions/pretend/fantasy	3.3	3	93.7
Sound play	1.2	0	46.9
Reproduction/elaboration	1.1	1	56.2

of story/song/poetry patterns			
Word play with multiple meanings	0.6	0	28.1
Describing impossible events or incongruities	1.5	1	65.6
Riddling patterns or "preriddles"	0.7	0	34.4
Conventional riddling	0.5	0	34.4
Telling or playing jokes	0.3	0	15.6
Self disparagement or displacement	0.1	0	9.4

Chi Square analysis was performed on the humour categories to determine whether there were age or gender differences in the children in the subgroup; however, no significant differences in humour type as a function of age or gender were found. Children of all ages primarily exhibited types of humour which did not require understanding of complex multiple meanings. For example, conventional riddling and joking types of humour were of low incidence, which may have contributed to the finding of lack of significant age distinctions in humour type. The records for boys and girls also showed very similar types of humour.

Because hostile and sexual or toilet humour are considered important factors of humour expression in the Freudian theory of humour, this dimension was analysed in the subgroup examples. Examples of these types were reported only for a small number of the children (mean - 1, median - .05, range - 0 to 7 per record).

Sexual or toilet humour was reported to occur at an even lower level (mean - 0.7, median - 0, range - 0 to 4 per record). Whether the lack of these types of humour was due to an absence of these expressions, especially among the younger age level children, or to parental censoring which resulted in their not recording these types of humour examples is unknown. Even with the small number of examples, however, Chi Square analyis of gender differences indicated that the expression of hostile humour was significantly different (X^2 (df 4) - 11.58, $p < .02$), with records of boys showing more examples than records of girls. This result is congruent with other analyses of hostile humour expression (e.g. Groch, 1974; King & King, 1983; McGhee, 1976).

For the total set of humour examples recorded for the subgroup (100%), 25% were recorded in the morning, 29% in the afternoon, and 46% in the evening. The four settings reported as the major sites for the subgroups' humour expression were the same as those noted for the total sample. The mean number of total examples per record observed in the living/dining/family room was 5.1, in the kitchen was 3.2, in the bedroom was 2.1, and in the car was 1.4.

Children initiated the humour 58% of the time and responded to humour expression of people or media and to incongruity of objects 42% of the time. A human stimulus, usually a family member, was present in 82% of the subgroup examples. Parents and/or siblings were involved in the majority of the humorous examples (mother, 32%, father 24%, siblings

38%). Of the total set of examples, 48% involved adult reciprocal interaction, and 23% described adult playfulness as a factor in the humour event; thus 71% of all examples had an adult interactive component of some type. The most frequently noted non-human stimuli were household objects/ food/clothing, with a median of 2 examples per record in this category. Non-human stimuli were absent in over half of the examples in each record.

Compilation of the number of times children repeated their humour and/or elaborated upon it, creating new versions, shows that in the total set of subgroup examples the average number of repetitions per record was 63.5 and of elaborations per record was 9.2.

The relationship of the derived cognitive stage level scores to age and gender was also explored within the subgroup sample. The correlation coefficient for age and cognitive score was .49, $p < .005$. The gender to score relationship was non-significant. The relationship between the psycho-emotional stage score and age was also non significant, as was the relationship for gender.

Examples of Humour Expressed by Children of Differing Age Levels

Although generalisations regarding age differences in humour development are limited because of the many uncontrolled variables in this study, these observational accounts do give some insights into the characteristics of early humour. Some specific examples are therefore provided.

S., 18 months: "She laughed loudly when I read her the rhyme, 'Hey, diddle diddle,' especially when I recited the line, 'The little dog laughed....'"

N., 30 months: "He sang a song and changed the lyrics from 'peanut butter' (in original) to 'tuna butter.' He repeated this over with increasing glee."

J., 36 months: "While drawing a picture of me (mother), she put 'hair' all around the circle's face and then called it 'Mommy Porcupine!'" (Laughter)

L., 39 months: "After her older sister told the riddle, 'Why does the turtle cross the road? To get to the 'Shell station,' L. insisted on telling a 'riddle' also. Her riddle was "Why does the dog cross the road? To get to the station.' She and her family laughed at the 'riddle' she told."

C. and friend, 44 months: "When saying goodby to each other C. said, 'Goodby, Daniell Goodby, Pizza Daniell Goodby, Ice Cream Daniell Goodby, Macaroni Daniell' After each goodby, they both laughed loudly."

T., 48 months: "He played a 'gonna get you' tickling game with dad. This is one of their favorite games"

S., 58 months: "She was watching a slapstick movie on TV and when the house fell apart (doors falling off, etc.), she laughed so long and hard."

C., 63 months: "To me (mother) she said, 'I can play the piano by ear.' Then she banged her ear on the piano keyboard and laughed."

B., 65 months: "He repeated a riddle he heard at school (or at least his version of it): 'What's read and white? A newspaper!'" (Laughter)

G., 68 months: "While singing happy birthday to his brother Reggie, he began to sing, 'Happy Birthday to Reggie-Poopie.'" (Laughter).

S., 75 months: "Riding along in the car, he asked his uncle and father this riddle: 'Why was 6 afraid of 7? Because 7, 8, 9!'" (The adults laughed at this one!)

D., 84 months: "He told his uncle about the practical joke that he and mother were going to play on his father. They were putting birthday candles that wouldn't blow out on Dad's cake. D. thought this was hilarious."

Discussion and Conclusion

The method which was used in this study to collect the humour examples resulted in some problems which make it difficult to draw generalisable conclusions. For example, it is not clear what the differences were between the parents who did and did not choose to complete the humour records and between the characteristics of their children and other children of the same ages. Nevertheless, the study data do indicate that parents who are motivated to collect examples of their children's humour are able to provide some information about humour development which is similar to that reported in studies using different data collection techniques.

For example, results were congruent with the cognitive stage theory of humour development, with the descriptions of the types of humour found in other studies of young children and with reports of the prevalence of humor-related behaviour signals such as laughter and vocal exaggeration as reported in the literature (e.g. McGhee, 1977; Krogh, 1985). The lack of significant differences in the types of humour expressed at various age levels (e.g. riddle patterns at younger ages and true riddles at older ages) is probably due to the relatively small number of "preriddle," genuine riddle, and joke examples recorded overall and the fact that the age range of subjects was limited to children 7 or younger.

Similarly the fact that the study results did not show the age-related stage trends posited by Freudian theory, may be explained by the fact that there were so few examples of the "joking" stage of humour. Within the subgroup corpus of joking stage examples, however, the study results indicated that boys' records had more example of hostile humour. This result is in the direction of earlier reported research (e.g. Groch, 1974).

Studies of humour in school settings often show male and female differences; however, in this study of humour expressed at home, most gender comparisons showed no significant differences. Perhaps girls feel more free to exhibit varied types of humour in home settings, or perhaps the girls in this study were ones who were exceptionally interested in humour. The reasons why more parents of girls returned the humour records and why there were more younger girls in the subgroup with more than 10 examples, resulting in a lower mean age for the group of girls, is also unclear. One possible explanation is that girls' greater verbal ability at an earlier age make it easier for parents to note their expressions of early humour. Communicative competence has been shown to be related to humour expression (Carson, Skarpness, Schultz, and McGhee, 1986). A question needing further exploration, therefore, is whether there are gender differences which were masked in this study because of the younger mean age level of the female group. Also of further interest are questions of how the communicative competence of children of different genders and age might affect parents' observations of their humour and how setting variables (especially home versus school) might influence girls' humour expression.

The sample may also have been biased because those parents who collected the examples were more encouraging of humour expression in their homes and more facilitating of their children's humour development. Certainly the active engagement of many parents in the humorous events would indicate that these parents value humour. Also, because dispositional and personality variables have been shown to be related to humour, the children in this sample may be ones who are more inclined to this form of expression. Therefore, another question for further study is how parental and child individual differences might interact to promote the development of humour in children.

This study gives useful insights into ecological variables, such as the physical and social settings in which humour is expressed, the interactional roles adults take in facilitating humour expression and the kinds of stimulus materials which promote humour-related behaviours. Questions for further study include investigation of how these ecological variables elicit children's humour expression and what methods parents and teachers might use to facilitate its expression and development.

Because humour development is so closely tied to other areas of development and because it is so often overlooked or even discouraged in formal educational settings, a further implication of the study is that if adults pay attention to the types of humour children spontaneously generate and enjoy, they may be more effective in planning appropriate educational environments for those children. Much more needs to be learned about children's humour development and about the ecological variables which influence its expression. In particular, there is a need for further study of the effects on children's humour development of adults who value children's expressions of humour both in the home and within the educational environment of the school.

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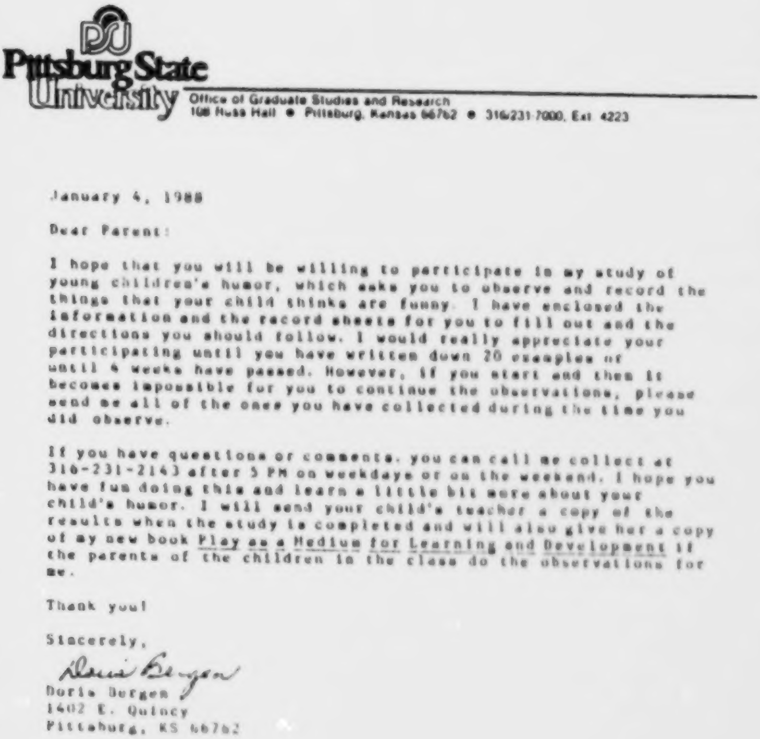

PSU
Pittsburg State University
Office of Graduate Studies and Research
108 Russ Hall • Pittsburg, Kansas 66762 • 316/231-7000, Ext. 4223

January 4, 1988

Dear Parent:

I hope that you will be willing to participate in my study of young children's humor, which asks you to observe and record the things that your child thinks are funny. I have enclosed the information and the record sheets for you to fill out and the directions you should follow. I would really appreciate your participating until you have written down 20 examples or until 4 weeks have passed. However, if you start and then it becomes impossible for you to continue the observations, please send me all of the ones you have collected during the time you did observe.

If you have questions or comments, you can call me collect at 316-231-2143 after 5 PM on weekdays or on the weekend. I hope you have fun doing this and learn a little bit more about your child's humor. I will send your child's teacher a copy of the results when the study is completed and will also give her a copy of my new book Play as a Medium for Learning and Development if the parents of the children in the class do the observations for me.

Thank you!

Sincerely,

Doris Bergen

Doris Bergen
1402 E. Quincy
Pittsburg, KS 66762

HOME DEMOGRAPHIC DESCRIPTION (Complete on day you start the observations)

Note date you begin observations____________________
month day year

Give name of child being observed: ________________________________

Give gender: Male__ Female__ Give birth date: ____________________

Give name, gender, and age of brothers and sisters of child being observed: (List all children in family)

Child name:__________ Male__ Female__ Age____

Child name:__________ Male__ Female__ Age____

Child name:__________ Male__ Female__ Age____

Parents' names: ____________________ ____________________ Telephone: ( ) -

Home address: ____
street city state zip

NOTE: This information is needed in case I need to telephone you about the records you send me and so that I can send you a copy of the results. There will be no mention of your or your child's name in the reporting of results.

AFTER COMPLETING THE 4 WEEKS OF OBSERVATION:

Give date of final observation____________________
month day year

PLEASE RETURN YOUR OBSERVATION PAGES TO YOUR CHILD'S TEACHER OR MAIL THEM TO ME AT THE END OF THE OBSERVATION PERIOD. THANK YOU FOR ASSISTING ME IN THIS IMPORTANT STUDY OF CHILDREN'S HUMOR!

FOR PARENTS: DIRECTIONS FOR OBSERVING AND RECORDING YOUR CHILD'S HUMOR

1. On the first day you start the observation period, complete the information on the Demographic Description page.

2. During the 4 week observation period, observe your child as he/she goes about regular activities and try to note at least 1 example of your child's humor each day. (There may be some days that you observe none and other days that you observe many). Please try to find at least 20 examples; if you can find more than 20, you should record as many as you have time to note. If you find less than 20, send as many as you have observed. Try to include examples of all the different types of humor that your child exhibits.

3. For each example of humor you observe, write down the following information, using the observation forms provided:

   1. Describe briefly the type(s) of humor you observed (for example, asking a riddle, laughing at a joke or funny word play, engaging in exaggerated fun-provoking action, etc.). Record the conversation or language play that occurred.

   2. Record the date and time of day each example occurred.

   3. Note who was present (parent, sibling, peer, teacher, etc.).

   4. State where it occurred (kitchen, porch, automobile, etc.).

   5. Describe what behavior signals showed that the child thought this action or language was funny (laugher, silliness, etc.).

   6. Note whether the humor was child initiated or was in response to humorous actions or speech of others (another child or adult, television show, book, etc.).

   7. Since much of children's humor involves repetition, record how many times the same language or action was repeated to provoke laughter or other behavioral evidence of humor.

(If you wish to give more details of the actions and language than the form allows, use the backs of the observation form pages.)

4. At the end of the 4 week period, send your complete records back to your child's teacher or mail them directly to me in the enclosed self-addressed envelope.

THANK YOU FOR YOUR WILLINGNESS TO PARTICIPATE IN THE STUDY!

HOME HUMOR OBSERVATION FORM

CHILD'S NAME__________ AGE___

EXAMPLES OF HUMOR (jokes, games, actions, word play, incongruities, slapstick, etc.)	DATE & TIME OBSERVED	SETTING WHERE OBSERVED	INITIATOR/ RESPONDER (child, peer, adult, sibling)	BEHAVIOR SIGNALS (laughter, exaggerated movement, etc.)	NUMBER OF REPETITIONS AND/OR ELABORATIONS

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Computer Education for Singapore Teachers in the Information Age: An Educology of Technological Innovation

Ai-Yen Chen
Institute of Education
Singapore

ABSTRACT

Phenomenal technological development in the advanced countries in the world have posed an immense challenge to the island republic of Singapore. To keep pace with the "microchip revolution," a number of high tech projects have been launched. Since the beginning of the 1980s, local private enterprises have produced computer hardware and software. The government has also set up more effective communication and information systems in Singapore and established more telecommunication links with other parts of the world via submarine cables or communication satellites. In response to the challenges of the Information Age, innovations in the policies of the Singapore Ministry of Education and developments in schools, the Singapore Institute of Education has reconceptualised its computer education program. The Institute is the one and only teacher education institution in the Republic, and it has the obligation to play a significant leadership role so that teachers and school administrators are prepared to cope with the high technology which lies ahead for future generations. The Institute's current innovations in computer education are only the beginning of a more comprehensive computer education program for school administrators and preservice and inservice teachers.

The Background

Technological development has ripple effects on people's expectations and the employment scene. Parents nowadays are expecting computer education for their children. Employers are making new demands on the current generation of workers. School teachers and principals are sensing the urgent need to be computer literate so that they can better prepare the children for their studies, future work and life in a high tech society.

How is Singapore's education system and the Singapore Institute of Education (the only teacher education institution in Singapore) responding to this urgent need and challenge? What are some of the major considerations in planning and implementing for teachers a computer education program which attempts to meet the needs and challenges of the times? What are some of the consequences of the program?

Educational Responses

Despite earlier attempts, it was not until 1980 that computer education was introduced fairly extensively to the Singapore schools. It focused initially on teaching computer science as a subject at the pre-university level, computer appreciation courses at the secondary school level and evaluation of the effectiveness of computer assisted instruction in primary school mathematics. Most of the school computer appreciation programs had, until 1986, concentrated mainly on programming in BASIC and LOGO, and they had benefitted only a select section of the school population.

According to a 1986 Singapore Ministry of Education report (Seah et al., 1986), every junior college had a computer club with membership varying from 60 to 100 students. At the secondary level, some 22,000 pupils (13.6% of the student popularion) were involved in computer club activities, and 505 teacher were in charge of the clubs.

In the following two years, facilities for computer learning had been further improved. By 1989, all 13 junior colleges in Singapore had two computer labs each. One of the labs was being used for the learning of computer science, the other for the teachers and other pupils. Forty-five out of the 130 secondary schools had their own computer labs. Each lab had at least 20 computers. The other secondary schools had at least three computers each, and they were eligible to apply for three more from the Ministry of Education. A few primary schools had established their labs with subsidies from the government. This meant that more teachers and more students would benefit from the availability and easier accessibility of computers.

In 1980, to teach the computer science course at pre-university level, about 100 teachers were trained at the Nanyang University (NU). NU subsequently merged with the Singapore University to form the National University of Singapore. The initial number of 100 teacher trainees was augumented by university graduates in computer science from foreign universities as well as from the local ones. From 1980 to 1988, the Curriculum Development Institute of Singapore (CDIS) conducted courses for about 1,100 teachers in charge of computer clubs in secondary schools. During that 8 year period, many of the trained teachers continued as club advisers, while others either relinquished their responsibilities in the computer clubs or left the teaching service altogether (Loh, 1988).

The Institute of Education (IE) of Singapore also played its part in training some 500 teachers for the Computer Appreciation Clubs in primary schools from 1981 through 1985. From 1986, IE adopted a new teacher education program for preservice students. Within the new program, a practicum curriculum was introduced, and computer education was made an integral part of it. By 1987, all preservice and inservice training at the Institute of Education included a computer education course in the use of computer applications software and computer assisted instruction courseware. Computer education was also extended to a wider range of inservice teachers. These included experienced teachers who were training to be heads of departments or school principals. In 1987, a total of about 1,000 preservice and inservice teachers received some form of instruction in computer education at the Institute of Education.

Rationale and Objectives of IE's Computer Education Program

In response to the challenges of the Information Age, the policies of the Ministry of Education and the developments in schools, the Institute of Education reconceptualised its computer education program. Accordingly, it identified new objectives and strategies for its implementation.

Research and evaluation findings from the advanced countries and recent studies by the World Bank have revealed decreasing interest in BASIC programming and increasing emphasis on applications software skills. From various studies conducted in the advanced countries from 1981 to 84, courses featuring applications software seemed to appeal to students more than programming courses (Ramsden, 1984). There were fewer withdrawals from courses, particularly among the girls, after some exposure to applications learning (Lockheed and Mandinah, 1986) in comparison to courses in programming with BASIC. Computer educators and educologists also argued for the parallel cognitive consequences of learning programming and applications software. Many of them also advocated appropriate learning theory based software development (Vogeli, 1987).

Taking into consideration the past experience of the advanced countries like the USA, Great Britain and Australia, IE's computer education program was been reconceptualised to include the following key features:

(1) applications based learning integrated with other media across the curriculum,

(2) learning theory based teaching and software development;

(3) multi systems approach for information delivery and networking.

Integrated and Applications Based Learning Across the Curriculum

The IE decided to emphasise the use of applicaions software together with other media resources in learning and teaching the various subject areas. Software packages like wordprocessors, databases, spreadsheets, graphic and statistical packages were integrated with teaching methods courses to give student teachers experience in creating teaching and learning materials with computers. Some examples of their work have included using the wordprocessor to improve writing in English, using databases for storage and access of information, using spreadsheets for the analysis of statistics in social studies and using a graphics package for the teaching of mathematics.

Teaching Based upon Learning Theory

The importance of having a sound and reasonable theoretical basis for teaching and learning with the computer cannot be overemphasised. Psychologists and educologists have developed and tested a variety of learning theories which have provided a reasonably firm scientific basis for teaching and learning. However, most of the computer based teaching is a poor imitation of classroom practice. For example, few courseware programs in mathematics and English Language exhibit any awareness of principles of learning beyond Thorndike's concepts of stimulus and response.

Awareness and concern to link the choice of software with a sound learning theory basis should be the hallmark of well informed teachers. The more interactive tutorial programs are usually based on holistic learning principles and cognitive learning theories. This is specially true in the learning of languages (which is a major concern in Singapore). In good quality interactive programs, students are required to answer questions, select choices or type of information within the context of a complete discourse rather than give one word responses to a simple phrase or sentence. In doing so, they improve in their writing and in their understanding of a complete discourse (Sinatra, 1987).

Multi-Systems Approach for Information Delivery and Networking

The ability to use multi computing systems is crucial in the Information Age. Teaching, studying and learning with computers should not be confined to a single machine or a single system. Consequently, the Institute of Education chose to adopt a multi-systems approach so that all trained teachers from the Institute would be comfortable in using different software on different machines and different databases on different delivery and networking systems.

The IE made it a matter of policy that every computer education course conducted by the Institute would incorporate the three features of applications based learning integrated with other media across the curriculum, learning theory based teaching and software development and multi-systems approach for information delivery and networking. This policy was to apply, regardless of student type and level of computing ability, and the policy was adopted to ensure the fulfilment of IE's computer education objectives.

Objectives

From the rationale for the IE's computer education program, three key objectives were derived. In the process of specifying the three key objectives, Robert Taylor's (1980) method of organising the three roles for the computer in education were used, viz. tool, tutor and tutee. The specification of the objectives were as follows.

Objective One: All beginning secondary and primary teachers and potential heads of departments and principals will be trained to use the computer as a *tool* for different applications, e.g. wordprocessing.

Objective Two: Key subject teachers should have more knowledge about the computer as a complementary means of instruction (as a *tutor*) across the curriculum. Computer assisted learning programs will assume a tutoring function for abstract and difficult concepts. Key subject teachers should be able to pass on their skills to other teachers in schools.

Objective Three: Specially trained subject teachers should be trained to use the computers to improve pupils' reasoning skills through programming, or by creating computer assisted learning programs. In doing so, the students teach the computer (*tutee*) to create useful programs and learn something as well -- a programming language and systems analysis.

Levels of Computer Education

To achieve the above objectives, IE's computer education program was conceived in three levels of training. These levels were to apply both to preservice and inservice teacher education.

The first level, Level 1, included training in basic knowledge of parts

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of a computer, its peripherals and their respective functions. It also included development of basic understanding of networking systems and knowledge of what is available and suitable for use in and outside the classroom. Finally, it included training in the use of the computer as a *tool* for wordprocessing, data processing, record keeping, graphic design for preparation of teaching materials, for assessment and administration.

The second level, Level 2, included exposure to a variety of computer assisted learning (CAL) programs which made use of the computer in the *tutor* mode in selected subject areas. Training was to be offered in the processes of evaluation, selection and utilisation of CAL programs for subject teaching, as well as in the use of application software to integrate or create materials for subject teaching.

The third level, Level 3, included training in how to use computer languages, such as BASIC and LOGO, and how to use authoring languages like SUPERPILOT to create CAL programs in the subject areas, i.e. the incorporation of the use of the computer as a *tutee*.

Implementation and Results

With the adoption of the rationale for the program, every computer course conduced by the IE has, as far as it is possible, incorporated the three features. This is to ensure that teachers are not only familiar with the use of computers and the users and producers of this techonology, but they are also able to educate pupils who reflect the same awareness and understanding of the symbiotic partnership of human being and computer.

To ensure that individual needs of the teachers are met, a three level computer education program with different kinds of courses has been implemented. The first level focuses on using the computer and computer software as a tool. The user is a consumer, a worker or a citizen using computers to access, retrieve, communicate and store information. The second level looks at the tutor mode. The computer is used as an instrument to acquire knowledge and skills in specific subject areas or as a tutor to supplement teaching. Selection, evaluation and utilisation of the available coursewares are of great concern. The third level incorporates the tutee mode of the computer in the activities of programming and conducting research in relation to computer education.

An example of the Level 1 course is the 30 hour preservice Information Technology in Education (ITE) course for all Diploma in Education (Dip Ed) and Certificate in Education (Cert Ed) students. The student teachers are expected to acquire skills to operate and use the computer and two local area networks. The first network is the JANET network, which links all 20 of the IBM JX computers. The second is the bilingual (English and Chinese) School Home Interactive Network Exchange (SHINE) for all subjects across the curriculum. The teacher trainees are expected also to learn to use applications software packages to do wordprocessing, create tables, graphs, charts and databases for information storage. They also enjoy some practical experience in using the computer as a tutor when they try out and evaluate courseware in different subject areas on different machines, e.g. IBM JX, IBM PC and compatibles, Apple 2E and Acorn BBC computers. Though most of the programs are of the tutorial types, students are asked to examine how they can be integrated and used in their lessons in the subject areas of specialisation.

Results from a study which evaluated the computer knowledge of Dip. Ed. students after completion of the course (1986-87) showed that all 376 of the students passed the course after mastering the required skills in wordprocessing, spreadsheet, database management and LOGO graphics. In a postcourse questionnaire, 75% of the students agreed that wordprocessing was imporant to themselves, while 81% indicated that spreadsheets and databases were useful for their own personal management. Consistently, the students with specialisations in mathematics and science indicated that computer applications were more important or useful to them than did students with specialisations in arts and social sciences (Koh and Harper, 1987). This difference among students with different subject specialisations was more marked than gender differences. Male students in the 1986-87 group comprised only 18.4% of the total population.

The Level 1 courses for potential heads of departments and principals had a different emphasis. In the Information Technology for Educational Management (ITEM) course, the participants received instruction in the use of at least two important application tools from a range of wordprocessor, spreadsheet and computer assisted learning (CAL) packages across the curriculum. They found the more interactive CAL programs particularly interesting and useful. The potential heads of departments, in particular, were given instruction about the great variety of CAL programs available to them in their own subject areas. They were provided with guidance in the processes of evaluating and selecting programs for classroom teaching and organising and managing CAL for individualised instruction for school pupils.

The participants of the Further Professional Diploma in Education (FPDE), the Further Professional Certificate in Education (FPCE) programs and the Diploma in Educational Administration (DEA) programs for secondary and primary schools were provided with instruction in the use of the School Link project of the Ministry of Education. School Link is a computer network which links the microcomputers in schools to a central computer system at headquarters. It has made available 7 application systems for the schools. These include pupil management system, office system, question bank system, time tabling system, financial system, library system and inventory system. Through the various components of the course, the participants learned not only to use the computer as a tool and tutor, but to manage computers and computer systems for administrative purposes.

At Level 2, the course in Innovating an Educational Computing Project in School for inservice teachers aimed at giving the participants experience with a range of applications software which could be used to create instructional materials in various subject matter areas. Also training was provided in the use of computer assisted learning (CAL) programs and ways in which they could be evaluated and derived from the viewpoint of sound educological knowledge and theory. The CAL programs which were considered in the course included individually and commercially produced programs. Also, locally created information and educational databases such as SHINE of the Singapore Press Holdings were examined, and the participants created their own programs by using software packages (e.g. a wordprocessor and a spreadsheet) and/or a programming language (i.e. BASIC or LOGO).

As a requirement of the course, the participants shared their knowledge and skills with the teaching faculty in their schools. They were required to apply the most workable diffusion of innovation principles in conducting school based workshops for their colleagues. Of the two participating schools in 1987, one third of the entire teaching staff (about 80 teachers) received training from IE students in wordprocessing, and more than half received instruction about the availability and applications of a variety of computer assisted instruction (CAI) packages. One school received instruction about the SHINE database. In fact, the participating school principal himself designed two mathematic programs for SHINE. Other teachers in the school subsequently indicated interest in designing programs which offered instruction in difficult scientific and mathematical concepts and in English and Chinese language learning with the assistance of SHINE (Chen, 1987).

Level 3 computer education courses are normally embedded within the teaching methods courses for teaching particular subjects. For example, the teaching methods courses for teaching the subjects of mathematics, physics, chemistry, biology and geography have included in them instruction in the use of computers to design instructional units. The training in computer programming is offered as part of the students' Curricular Subject Option (CSO) courses. In these courses, the IE students are using the computer as a tutee. A number of programming and authoring languages are used. These include BASIC, LOGO, PROLOG and SUPERPILOT. The student teachers are able to do so because they have learned these programming or authoring languages in the universities before joining the Institute of Education.

Conclusion

From the studies and evaluation of the computer education courses which the IE has developed in the mid to late 1980s, several conclusions have emerged.

First, applications software are useful for student teachers and teachers to prepare their own notes and instructional materials for the pupils. Spreadsheets are particularly useful for accumulating and analysing marks and for item analysis. The School Link database is very useful for the teachers and principals to organise, store, retrieve and communicate pupil data. Course participants have been satisfied with the requirement to learn how to use the applications software. They have had no difficulty in mastering the basic skills.

Second, computer assisted learning packages which aim at higher order learning are more interesting and useful than the recall and drill and practice types. Though the latter type should be used for reinforcement or for remedial purposes, often they are introduced to the schools as the only available courseware. As such, the computer is used in a very limited way, and many of the uninitiated users, in these circumstances, remain unconvinced that computer assisted learning courseware could be integrated into their lessons. However, course participants of the ITEM course have found that the CAL packages used on the IBM, Apple Macintosh and Acorn BBC Masters Series computers and the local database -- SHINE -- offer some alternative types of computer assisted instruction programs in mathematics, science, English and Chinese languages.

Third, authoring and programming languages have been used to create CAL programs which are integrated with the Cambridge Certificate of Examinaitons (Advanced or "A" and Ordinary or "O" Levels) syllabi and with the programs of instruction operating within the schools. They could be used to create CAL programs of the more interactive types. Appropriate authoring languages are already available, and additional authoring languages which can be used for creating CAL programs are coming onto the market. Their full potentials have yet to be explored.

Future Directions

In view of the high tech contexts of Singapore and its trading partners, schools and teachers will not only be called upon to use computers and computer systems to improve the quality of administraiton and instruction. They will also be called upon to prove their efficiency in employing high tech resources and in effectively using growing number of information databases. There is also the reasonable expectation that the "computer experts" in schools will become the nurturers of computer talents and producers of educologically sound prototypic learning and teaching materials which can be shared among students of different learning ability.

The Institute of Education is the one and only teacher education institution in Singapore, thus it has the obligation to play a signifanct leadership role in the development of training programs which will prepare teachers and school administrators for the high technology generations ahead. The Institute's current computer education plan is only the beginning of a more comprehensive teacher education program in the use of computers. There is provision for further development and expansion in line with the technological and social developments in Singapore in the future.

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An Educology of Policy: Problems and Issues in Relating Research on Teacher Thinking to Educational Policy

Miriam Ben-Peretz
University of Haifa
Haifa, Israel

ABSTRACT

The characteristics of research on teacher thinking and the requirements of policy making are often not compatible. Research is most often conclusion oriented, whereas policy making is decision oriented. It seems that one appropriate way of conceiving possible links between these two domains is through the use of schemata which have been developed by researchers on teacher thinking. These schemata could provide policy makers with new modes of understanding educational problems. Because of the importance of "pedagogical reasoning" in the development of professional teaching, it is contended that research on teacher thinking could have significant impact on the policies of teacher education. In order for that to happen it seems crucial to create a common basis for communication between researchers on teacher thinking and policy makers in education.

Orientations of Research on Teacher Thinking

One of the main problems in relating research on teacher thinking to educational policy stems from the inherent differences in the nature of these endeavours. Whereas most research on teacher thinking is conclusion oriented, policy making may require a decisions oriented approach to research (Cronbach and Suppes, 1969). Conclusion oriented research is defined as studies of the nature of humankind and society which are designed to lead to general principles. These conclusion oriented inquiries may yield some practical applications. But,

> Most fundamental knowledge, indeed, cannot be "applied;" it does not prescribe a suitable practice. Conclusion oriented studies are significant for practice if, cumulatively, they help the decision maker take the right things into account; they are most unlikely to give the decision maker the blueprint for an effective procedure, in advance of decision oriented research. [Cronbach and Suppes, 1969: 123-124]

At the present state of the art, most research on teacher thinking is not decision oriented, and therefore its relevance for policy making is limited. There are many examples of research which illustrate the truth of this proposition. Looking at the chapters included in two books on teacher thinking (Halkes and Olson, 1984, and Ben Peretz, Bromme and Halkes, 1986), we can see that they focus on the following issues: models and methodology for the study of teacher thinking, content and processes of thinking in various teaching tasks; advances in methods of data collection and analysis. All these topics reflect the nature of research on teacher thinking as a new field of study, searching for its conceptual boundaries and for appropriate modes of inquiry. Only few studies reflect a more decision oriented approach. Thus, we find a series of chapters dealing with preservice and inservice training of teachers based on teacher thinking perspectives (Halkes and Olson, 1984).

Additional evidence for the scarcity of research efforts on teacher thinking which may lead to policy making decisions can be found in Clark's and Peterson's review on "Teachers' Thought Processes" (1986). They propose three major categories of research: teacher planning; teachers' interactive thinking; and teachers' theories and beliefs. According to Clark and Peterson, the literature on teacher planning is "almost exclusively descriptive and deals primarily with the planning of experienced elementary teachers" (p. 267). That means that at present, there is not enough knowledge about the nature of teacher planning in a variety of contexts and that we still lack insights into the complex relationships between teacher planning and the process of teaching. Until such knowledge is available to policy makers, it is difficulty to image policy decisions which are related to the research.

In the realm of interactive thinking, Clark and Peterson claim that "we do not have a clear idea, however, of what consitutes effective interactive decision making by a teacher" (p. 281). If we assume that policy making in education strives for more effective teaching, and for the improvement of learning, we have to admit that research on teachers' interactive thinking does not provide us with a sound basis for decision making. As for teachers' theories and beliefs, the authors state that "it is difficult to synthesize a clear and unequivocal set of conclusions about teachers' implicit theories" (p. 291). It seems that at present research on teacher thinking does not offer sufficient "conclusions" which may be considered as the appropriate basis for policy making. More important, because of the inherent difficulties in transforming conclusion oriented research into practice, and because of the scarcity of research which aims directly at policy decisions making, we may be far away from valid and defensible use of research on teacher thinking.

Another implication of the nature of research on teacher thinking relates to the notion of control. Educational policies are designed for implementation. They aim at control by virtue of some measure of public authority. In contrast, research on teacher thinking is far from a control orientation. It is, usually, a private enterprise, lacking the aura of public authority, even when publicly funded. It tends to focus on the development of insights into individual cases and particular instances, without expectations for "implementation" results.

Policy Making in Education

We have argued that at the present state of the art in research on teacher thinking there is a lack of comprehensive, and decision oriented, knowledge to guide policy. We turn now to the discussion of some of the features of policy making in education which may be viewed as creating opportunities, or difficulties, for application of research on teacher thinking.

Dale Mann (1975) sees policy issues as a "middle stratum," with macrosocietal problems constituting the level above, and operational issues of managment and administration characterising the level of decisions below policy problems. Policy problems are defined by Mann (1975) as having the following characteristics:

> (1) they are public in nature, (2) they are very consequential, (3) they are complex, (4) they are dominated by uncertainty, (5) they reflect and are reflected by disagreement about the goals to be pursued. [p. 11]

Let us examine these features in the light of existing knowledge on teacher thinking. The public nature of policy issues implies that these are "perceived as needs that are now, or are about to be, appropriate for governmental action" (Mann, 1975: 11). It may well be claimed that the widely expressed dissatisfaction with the functioning of the educational system establishes needs which are appropriate for policy actions. Still, it is questionable whether existing research on teacher thinking offers substantial and relevant grounds for addressing these needs. Valid policy decisions depend on wealth of information. Bauer (1968) states that for decisions and actions which "generally require the most information and contemplation, we tend to reserve the term policy" (p. 2). We have seen that such wide and valid information may still be lacking.

The topics of research which are chosen by investigators who are interested in teacher thinking are not necessarily relevant to policy makers. Thus, some research on teacher thinking focuses on the planning activities of experienced primary teachers, while much of the dissatisfaction with the educational system relates to the functioning of secondary schools (Rutter et al., 1979, Boyer, 1983).

"Policy problems are consequential because they combine fundamental (and often political) relationships with substantial impacts in substantial numbers of people" (Mann, 1975: 13). There is no doubt that research on teacher thinking relates to important, and often political, issues such as the professional status of teachers. It reflects some fundamental concerns of education: the modes in which teachers plan in the pre-active phase of teaching; their interactive decision making; their post-teaching reflections. Research on teacher thinking seems to be closely related to the processes of teacher development. Moreover, any policy decisions based on this research may have potential impact on very large numbers of teachers and students. It appears, therefore, that from the point of view of being of inherent consequence, research on teacher thinking has much to offer to policy makers. The question remains whether present day knowledge on teacher thinking is ripe for such a contribution.

Policy issues are complex. According to Mann (1975), school issues are multifaceted, presenting "a veritable labyrinth for analysis and action" (p. 4). This characteristic of policy issues suggests difficulties for any attempt to relate research to policy. Research on teacher thinking focuses on a rather narrow and limited aspect of schooling, namely, on what goes on in the minds of teachers. Though this is, indeed, an important element in the complex network of schooling, it would seem to be very difficult to base policy decisions affecting school life on this aspect alone without considering other facets of schooling. The inherent complexity of classroom environments makes any extrapolation from one teaching situation to other circumstances questionable. Present studies on teacher thinking may offer insights, and they may suggest new ways in perceiving the professional activities of teachers, but it is extremely difficult to outline directives for policy based on these studies. Good examples of such enligtening research are, for instance, the study by Lampert (1985) about teachers' strategies for understanding and managing classroom dilemmas, the work done by Bromme and Dobslaw on teachers' explanation of students' understanding (1986), or studies conducted by Connelly and Clandinin (1985) on the personal practical knowledge of teachers. These studies, and others as well, provide exciting new conceptual frameworks for research, and they extend our understanding of teaching and teachers. They enrich our insights into the complexities of classrooms in action, therefore, it seems that in fact, they make the relationship to policy decisions even more problematic. This may seem like saying that the more we know, the less able we may be to act on our knowledge. Indeed, the very relationship between knowledge to action, as reflected in various studies on teacher thinking, is viewed in different ways (Clandinin and Connelly, 1986), adding to the difficulties in trying to bridge between research and policy making. Clandinin and Connelly differentiate between logistic, problematic and dialectic approaches to the relationships of teacher thinking to teacher action. Studies on teacher thinking may assume that thoughts are directing action in an almost linear fashion, reflecting at "logistic" approach (Munby, 1983, Olson, 1981). Other studies reflect, according to Clandinin and Connelly, a view of the relationship seen as "problematic" (Lampert, 1985). Still others, like Connelly and Clandinin (1985) and Elbaz (1981), are viewed as adopting a reflexive, "dialectical" approach to the relationship between thought and action. These different approaches to the very nature of the relationship of thinking to practice seem to indicate that substantively different links to policy can be envisaged and have to be elaborated before research on teacher thinking can inform policy.

One of the characteristics of policy issues, as defined by Mann, is their uncertainty. Policy deals with the future.

> The past may be all we can know but the future is all we can affect . . . . Policy problems exist, are defined, are the subject of attempts at resolution -- all in the future. Their shape, salience, and relationships with other areas may all be changed by the long process from recognition to formulation to implementation (and hopefully to "solutions") has been carried out. [Mann, 1975: 15]

This feature of policy decisions creates difficulties for any attempts to use research to solve educational problems, because all research is by its nature based on past experiences. Research on teacher thinking is hardly predictive and is not future oriented. Time plays an important role in dealing with policy issues from yet another point of view.

> Practically all policy problems have an [sic] historical context. They have become consequential matters of public concern precisely because they have not been susceptible to easy solutions. [Mann, 1975:15]

If we look at policy problems as "middle stratum" issues, which are characterised by being imbedded in historical backgrounds, then the role of research on teacher thinking in relating to these issues is doubtful. It is not clear, at present, how insights into teacher thinking will be helpful in relating to such longstanding policy problems like literacy, or issues of equity .versus excellence.

Policy issues are characterised by the differing interests which are involved in the process of decision making. "We can find many basic interest schisms in the society that are clearly reflected in education problems" (Mann, 1975: 16). Any attempt to base policy decisions on research on teacher thinking would raise issues of differing and conflicting interests. Let us imagine that research on teacher planning would lead to policy decisions about the structure of working hours of teachers at school, such as a significant shortening of the load of actual classroom teaching. This would probably be welcomed by teachers and teacher unions, but would create a demand for greater financial resources, higher taxes and recruiting of more teachers. It is reasonable to believe that the ensuing conflict of interests would make the implementation of such a policy very difficult.

Up to now, we have concentrated our discussion on the problematic issues in relating research on teacher thinking to educational policy. What, if any, are some possible links tying this research to policy?

The Role of Schemata in Learning from Research

Much has been written about possible bridges between research and the practice of teaching. This literature may be viewed as providing frameworks for relating research on teacher thinking to policy making.

In his article on "Learning to Teach Effectively from Research on Teacher Effectiveness," Fenstermacher (1982) argues that there may be different ways to build bridges between research on teaching and teacher practices. Among these possible bridges he discusses rules, evidence and schemata. By rules, Fenstermacher means the conversion of results of research to "imperatives for teachers to follow" (p. 7). Bridging by evidence relates to the serious weighing of research results by practitioners. Whereas

> rules are imprecise representations of research findings because their construction requires the rulemaker to interpret the findings, evidence conveys to the practitioner precisely what researchers have learned from their inquiries. [p. 9]

The third way to bridge research and practice is with schemata, which "provide a way to 'see' a phenomenon and a way to think about it" (p. 9). New schemata may help practitioners to structure and interpret their educational experiences in new and unaccustomed ways, leading to new practices. Fenstermacher's distinctions may help us see a way for relating research on teacher thinking to educational policy in spite of the reservations voiced above. There are probably no 'rules' to be devised on the basis of present research on teacher thinking which may be conceived as guidelines for policy makers. But, there may be some research which will provide "evidence" for consideration and deliberation. A good example of such research is Lampert's work on teacher dilemmas (1985). Teachers and adminstrators may tend to believe that dilemmas have to be 'solved' by adopting one of several conflicting ways to handle a situation. Lampert's notion of "dilemma management," by trying to live with the dilemma through the adoption of strategies which do not call for "either/or" decisions, may be used to rethink one's approach to dilemma situations. Policy makers may reflect on their own beliefs about appropriate ways to deal with dilemmas in the light of Lampert's research findings on the ways in which teachers handle their dilemmas.

Probably the most relevant mode of relating research on teacher thinking to policy making is through schemata which are developed by the investigators. An example of such a schemata is the distinction between the knowledge and instructional actions of novices and expert teachers (Leinhardt et al., 1984; Leinhardt and Greeno, 1986; Berliner, 1986). Clark (1986) states that "we have come to believe that there are qualitative differences in the ways in which experts and novices know and think about what they know" (p. 10). This schemata may be considered as having possible impact on policy makers. The knowledge which we have at present about qualitative differences between expert teachers and novices may not be considered grounds for radical policy decisions about the role of novice teachers in schools. On the other hand, insights into thinking patterns of novices may shape teacher education policies and may be seen as grounds for changes in the curriculum of teacher education programs. In teacher induction strategies, Leinhardt and Greeno (1986: 94) suggest that

> new teachers can benefit from information about different routines, methods of teaching them to students, and ways of using them effectively to maintain student interest.

Concepts such as "action agenda," or "techniques of structuring information," may become part of the knowledge base of teaching. The perceived possible impact is not only on the content of the curriculum of teacher education programs, but also on the nature of teacher practicum, its duration, timing and structure. The practicum may last longer, may continue after novice teachers finish their pre service programs and may include significant sections of guided analysis of thought and action patterns of teachers. The effect of such changes on the timetables of schools may be far reaching, with ensuing conflicts of interests. Still, this is an example of a possible impact of research on teacher thinking on educational policy.

The discussion so far has brought us to the conclusion that schemata developed by researchers on teacher thinking may be important for teacher education policies. Let us turn now to some elaboration of this point.

Research on Teacher Thinking and Teacher Education Policy

The field of teacher education may be viewed as exhibiting some of the characteristics which make it an appropriate arena for policy making at the "middle stratum" level. Shulman (1987: 3), in discussing several reports on how to improve teaching, states that "one of the recurrent themes of these reports has been the professionalization of teaching." There is no doubt that this issue has been of public interest, especially in the USA. Two major public reports have been the Holmes Group Report (1986), and the

Carnegie Task Force Report (1986). It seems that the professionalization needs of teaching are perceived as being appropriate for governmental action. Any reform proposals carried out in the light of these public concerns are bound to affect a very substantial number of people, and they may involve considerable conflicts of interests. According to Shulman (1987), professional reform movements reflect a belief that there exists a knowledge base for teaching. Shulman outlines the categories of knowledge "that underlie the teacher understanding needed to promote comprehension among students" (p. 8). Pedagogical content knowledge is, according to Shulman, "the category most likely to distinguish the understanding of the content specialist from that of the pedagogue" (p. 8). This domain could benefit greatly from any insights provided by research on teacher thinking. How teachers understand the educational potential of the subject matter to be taught, how they interpret texts and transform these into instruction, are important issues of pedagogical reasoning. Insights into these issues may be important for changing policies of teacher education. In Shulman's words,

> The conception of pedagogical reasoning places emphasis upon the intellectual basis for teaching performance rather than on behavior alone. If this conception is to be taken seriously, both the organization and content of teacher education programs and the definition of the scholarly foundations of education will require revision. [p. 20]

A specific example of ways in which research on teacher thinking may inform the organization and content of teacher education programs relates to curriculum knowledge and teacher planning. Teacher planning, based on the "formal" curriculum, i.e. existing guidelines and materials such as textbooks, is essentially the transformation of ideas into teaching acts. Notions of what this transformation entails vary. Clark (1986) suggests that research on teacher thinking has undergone a conceptual change since the 70's. The leading metaphor was the teacher as "decision maker," who makes rational decisions about materials and instructional strategies based on weighing of alternatives. Since the 80's, according to Clark, teachers tend to be viewed as "reflective practitioners," who interpret their teaching situation based on their personal knowledge. This personal knowledge may guide teachers' understanding and interpretation of the potential imbedded in curriculum materials (Ben Peretz, 1975), in terms of teachers' own understanding of the nature of subject matter and instruction. Curriculum interpretation is one component of pedagogical reasoning. Development of knowledge about the ways in which teachers interpret materials may inform policy decisions about processes of teacher education. One policy implication may be the creation of opportunities to work in groups, analysing and comparing different interpretations and scrutinising their practical implications in a variety of teaching contexts. The different interpretations may then be transformed into lesson plans, to be reflectively tried out and discussed in further group meetings. Such a process may enrich teachers' notions of the educational potential of curriculum materials. The process may free them from the "tyranny of texts" (Shulman, personal communication). How this process is to become a more central part of teacher education, what it would mean in terms of preparation of special teaching materials, how it would fit in with notions about the practicum and how it would figure in teacher assessment procedures are some of the policy decisions which would have to be made.

Conclusion

Some of the issues and problems in relating research on teacher thinking to educational policy making have been outlined above. It seems that one appropriate way of conceiving possible links between these two domains is through the use of schemata which have been developed by researchers on teacher thinking. These schemata could provide policy makers with new modes of understanding educational problems. Because of the importance of "pedagogical reasoning" in the development of professional teaching it is contended that research on teacher thinking could have significant impact on the policies of teacher education. In order for that to happen, it seems crucial to create a common basis for communication between researchers on teacher thinking and policy makers in education.

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The Importance of Ethnography for Educology: Towards Thicker Description of Teaching

John K. Olson
Queen's University
Kingston, Ontario, Canada

ABSTRACT

Thick description of teaching is the product of ethnographic investigation of teaching. A thick description describes not only the behaviour of teachers (what they do), but also the significance of what is done in terms of the rituals which provide context and give meaning to particular instances of behaviour. An illustration of thick description is provided from an ethnographic investigation of how teachers manage innovations (such as the introduction of microcomputers) which challenge their classroom routines. The sorts of educological insights which thick description provides extends understanding of the classroom ethos. It also facilitates contemplation about where tradition is taking us in education and what we think about the worth of that direction. The business of reform in education should not be the abandonment of tradition, but rather to know the tradition, judge it and improve it. "Thicker description" helps us do that by putting both teachers and outsiders "in the picture." Once there, the journey outward through the looking glass to new traditions becomes possible.

Introduction: "Thick Description"

Clifford Geertz (1973) did not invent the term "thick description," but he made it famous. In a lecture given at the University of Saskatchewan, Gilbert Ryle (1971) drew a distinction between thinner and thicker description of actions. To do this, he asked the question, "What is *le Penseur* doing?" *Le Penseur* is a famous statue by Rodin very much in the act of cogitating. "But what is the thinker really doing?" asked Ryle. From a "thin" point of view, the thinker is "saying things to himself." Ryle criticised this view of thinking:

> It is often supposed by philosophers and psychologists that thinking is saying things to oneself .... But [this view] fails because it stops just where it ought to begin .... What is the correct and thickest possible description of what [he] was trying for in mumuring those syllables? [p. 487]

What *else* might he be doing? What more can be said?

That "more" is what constitutes a thicker description. It is not that the thinker is not saying things to himself (although he might not be), but that describing what he is doing that way is only a beginning. The description can be thickened by reflecting upon his purposes in putting his chin on his hand, and by considering his situation as a thinker. In short, we have to look carefully at all we know about the thinker and try to invent a coherent story that makes sense of what we know. We have to place the thinker in a situation which is intelligible to us and to him (could he actually think). We have to interpret his activity to know it.

Thick Description of Teaching

Thick description is what we need for understanding teaching. What might this thick description be like? When people do meaningful things, they depend upon a pre-existing structure to communicate their intention. This structure enables them to convey their meaning. Thick description of teaching is the uncovering of the meaning of what is being said (done) by knowing the structure in which it is said (done). As Geertz points out, what most prevents us from understanding what people are up to

> is not [so much] ignorance as to how cognition works as [it is] a lack of familiarity with the imaginative universe within which these acts are signs [p.13] . . . . Doing ethnography is like trying to read (in the sense of "construct a reading of") a manuscript -- foreign, faded, full of ellipses, incoherencies, suspicious emendations, and tendentious commentary, but written not in graph of sound but in transient examples of shaped behaviour. [p. 10]

Ethnography is no stranger to educology. Yet, even so, there is not much educology which has been produced from ethnographies in the "thick description" sense of that method (Feiman-Nemser and Floden, 1986). That is a pity because ritualised practice is so much a part of the social life in schools. We think we understand what happens in classrooms when we think of it is a technical process based on the application of psychological principles. Once we see teaching as a thing itself -- a social thing -- it becomes much less clear that we know what is going on. It is only by thinking of teaching in instrumental terms (Harre, 1979) that we have any security that we know what is being "said," but the justification for that security is only apparent -- much more is being said than what a focus only learning as a technical problem would lead us to consider, and what that is, is not clear at all.

This became clear to me in talking with teachers about their experiences with microcomputers (Olson and Eaton, 1986; Olson and Eaton, 1987; Olson, 1988). The teachers with whom we talked spoke of matters which went well beyond the rhetoric of computer based learning to more fundamental issues to do with classroom life and the structure which sustains it. What these teachers told us had to be understood in relation to basic securities and insecurities at work in the school. Only by making explicit these issues could we even begin to make sense of the way microcomputers were being used, or more exactly, of how teachers themselves interpreted their experience with microcomputers. As Geertz (1973) has said,

> Looking at the ordinary in places where it takes unaccustomed forms brings out not, as has so often been claimed, the arbitrariness of human behaviour but the degree to which its meaning varies according to the pattern of life by which it is lived. [p.14]

Not only did we find we had to probe the deeper structure of classroom life in order to understand the teachers experience, but we had to appreciate that primary and secondary teachers have different patterns of school life -- that the culture of these divisions of schooling are not the same. But we would not have attended to this possibility if we had been concerned about teaching only as a cognitive process. Only if we conceive of teaching as a social process which manifests itself through its culture are we sensitive to these nuances. We might think of our attending to the cognitive process as a thinner description of teaching, and to cultural processes as a thicker one. Thus we extend our description from one level to another, rather than offer two different versions of it.

Classroom Routine as Expressive Text

Before we look at texts taken from teacher's experience, we need to consider a fundamental unit of analysis -- the classroom *routine*. It is through classroom routines that teachers express themselves. To understand what is being said in classrooms it is important to know what the routines are. These routines could justly be called rituals -- cultural performances involving significant symbols.

We tend to think of routines and rituals as thoughtless or primitive -- as "folkways" (Buchman, 1976). Yet how can such expressive acts be considered thoughtless if the expression of ideas is their very purpose? It is only by thinking that some other language is more thoughtful that such a judgement can be made -- a scientific language. But why would one want to substitute scientific language for folk expression? Is it because we think folk expression is less rational? Or is it that we think that what has accumulated through tradition lacks warrant? Our prejudice against tradition and folkways is yet another example of what Schon (1983) called technical rationality. Part of the difficulty, we warrant, is that it is not easy to find out what the rituals of schooling are. Geertz (1973) suggests that "folk" (i.e. insiders) may offer "visitors" (i.e. outsiders) a different version of a ritual. In any event, whereas for "visitors" rituals can only be "aesthetically appreciated or scientifically dissected [,] for participants, they are in addition ... models ... for believing" (pp. 113-114).

To return to our focus on information technology, the way teachers talk about computers has to be seen (i.e. conceived) against (or in relaiton to) existing routines of the classroom. It is thus that the sense that they make for teachers can be further interpreted by the visitor. Classroom routines tell us about what people who live there believe in because the routines are expressive texts. Such texts help us appreciate what we see there and to make sense of it. Teachers have well established practices for conducting life in their classroom, and the routines allow the business of the class to be done. The routines imply (or strongly suggest) something about who the teacher is and about the significance of what is done. Routines embody meaning. They express things. We may mistakenly take them to be simple procedures, but in truth they are usually far more complex than we think.

Computer based learning threatens those routines. The computer is a trojan horse in which lurks threatening new possibilities. It threatens to cause routines to be reappraised.

How teachers use computers and how they construe their experience cannot be properly understood without knowing the backdrop of everyday routines and what that can tell us. Classroom routines are not what computers will replace; rather, they are where computers must fit if they are to be useful to teachers. However making such a fit will jossle both teachers and software designers.

What is a classroom routine? Consider one of the grade 5 (the 6th year of school in a K-12 system, or about age 11) classes which we watched. The pupils presented group reports on a social studies project. The reports were part of an integrated and partially computer based unit organised in relation to the topic of "Fire." Each group followed a careful sequence of steps; each group used the same steps. This is a complex and patterned process in which students participate in a form of classroom life which allows for personal "glory," but minimises risk of "loss of face." Making "presentations" is a routine which the teacher has developed. It allows for the display of knowledge and for the receiving of public regard. Classroom life is made up of such routines. It is through these routines that the ethos of the classroom is created and experienced.

In the routine of class presentations, the teacher allows students to pursue their interests within a definite structure. There is a large degree of predictability in what the students study and how they make their presentation. The predictability allows the teacher to know when things go wrong and enables the teacher to put them right. The teacher is thus able to exert influence over the point and direction -- the meaning -- of classroom activity through using routines.

Routines reflect judgements which teachers make about how to structure daily life in their classrooms. They are routine only in that they recur, but they are not thoughtless or dull. Making sense of them is crucial to understanding the way teachers use resources such as computers in the classroom. Yet we have tended not to pay attention to teacher routines in thinking about how school practices change, except to think of them as barriers to change. Why do we view routines this negative way?

Teachers often have been accused of rather simplistic conceptions of what they do. Their educology (propositional knowledge about education) has been seen to be weak and in need of bolstering, especially by extracting solid prescriptions from the social sciences. Indeed, some computer enthusiasts argue that teachers should step aside and let better technologies take over (Amarel, 1983). We should doubt such a diagnosis and prescription.

Dan Lortie (1975), for example, says that the "ethos of the profesion is tilted against pedagogical [i.e. educological] inquiry." Teacher theories, he says, are simple and uncritical. But is their *practice* itself so bereft of intelligence? Is the *know-how* so deficient? This is another matter, and I think the answer is no. The practice is much more skilful and intelligent than the say in which teachers talk about it might indicate. What teachers know is embedded in their *know-how*. It is only because of what Ryle (1949) calls the "intellectualist legend" that we tend to assess the intelligence of performance on the basis of the quality of the supposed antecedent internal operations of planning. If we find that the operations are poorly articulated, we assume that the practice itself is also poor. This is not so, says Ryle. These are two different things. He argues that contrary to the intellectualist legend, efficient practice precedes the theory of it, and intelligence is in the practice, not in the *thinking* about it. Abilities are played out in the practice itself -- in the *know-how*.

Teachers may not be able to give a well articulated, propositional account of their practice. But complex ideas about how to teach are in the familiar routines of the classroom. Not "thinking" about teaching does not stop teachers from efficient practice. While it may be a "good thing" for them to be able to articulate well what they are doing, that does not stop them doing it well. Indeed talk about routines is a "thin" representation of it. The capacity to talk about teaching and to do it are different, but related practices. If we want to study what teachers know how to do, we have to observe *what* they do. Teacher thinking in this sense is in the practice of teaching.

According to Polanyi (1958), comprehesion of what another person is doing cannot be had through mere examination of the particulars of their behaviour. We have to understand their behaviour as points (or instances of action) directed towards the purposes which they serve, and in terms of those purposes. The meaning of what people do lies in the purposes served by those actions. The actions are not meaningful in themselves. They are indicators of the purposes which they serve and which give them meaning. In themselves, they mean nothing.

On this view, atomistic acounts of what teachers do seem bound to fail for lack of a context to make sense of them. Such a focus guarantees that we will not really understand the meaning of isolated acts. Only acts seen against a larger picture will do. Such a larger picture is given by the routines of teaching.

With this idea in mind, it is important to look beyond the instrumental uses of computers in classrooms and beyond their "official" uses to their place in the affective life of the classroom. We have to consider the meaning of their use. How does one, then, gain access to what teachers experience in using computers, and to the language they use to talk about their experiences? Such a phenomenological problem requires that attention be given to two important methodological points. People will have to be allowed to speak for themselves in their own language, and conditions will have to be established to allow their true feelings to emerge. With these considerations in mind, methodological guidance can be found in the work of George Kelly (1955). We used Kelly's "personal construct theory" to develop a clinical interview strategy based on the idea that how teachers deal with a change is dependent on how they construe classroom life. Kelly's technique allows the investigator to confront the teachers with a "picture" of their thinking about classroom activity, and particularly about relationships with the students.

As Shaw (1980) suggests, grid techniques can be used "to elicit the unique dimensions along which each individual classifies his [or her] world" (p ix). In our use of Kelly's method, teachers are asked to construe classroom events involving computers. By so doing, we gain some insight into the way they think about their expereince with microcomputers. For a description of the method, see Olson and Reid (1982) and Olson and Eaton (1986).

Kelly's grids are the means to achieve the "in dwelling" of which Polanyi speaks. Kelly says,

> If you do not know what is wrong with a person ask him, he may tell you. The clinician who asks such a question will have to be prepared to do a lot of listening. [pp 322-323]

Indeed Mischel (1964) suggests that Kelly's theory may be regarded as a guide to careful listening aimed at uncovering the *reasons* why people behave as they do. Kelly emphasises the importance of attending to the form of people's constructs. It is the form which gives significance to action because it is the form which constitutes the rules of reasons for action. Kelly's method enables people to discover and to appreciate what their actions mean. It is crucial to get behind the routines of classrooms to discover their significance. This is especially important if we are to understand the impact of computers, because computers have the potential to dislocate these routines.

Through the Looking Glass? Computers in Classrooms

With these comments about routines and our preferred method of studying routines in mind, let us turn to the experience of two teachers Mr. Coulomb (primary) and Mrs. Melville (secondary). We used Kelly's method as part of the interviews we conducted with these teachers. In each case, we will consider only part of the picture of these teachers, which has been given elsewhere in greater detail (Olson, 1988).

The New Machine in Mr. Coulomb's Class

Mr. Coulomb teaches at a primary school in an outlying district near a small city. He is an experienced teacher interested in computers and especially in LOGO. He used the software program which we were field testing with his grade 7 (the 8th year of school in a K-12 system, or about age 12) class for three weeks and at the end of that time we asked him to construe his classroom experience with computers.

Q How do your feel when a student offers the class computer expertise? How do you see your role while he is in the classroom?

A Where the [management] problem comes is that he's going to be doing things on the machine that I may not know how to do. I have to leave him on his own as far as the technical [aspect] is concerned. I have to watch it myself, manage it, and handle the situation. I think I'm going to have to learn some of that. That's the other side of the coin. I may be learning from the youngsters. Which is fine by me. It doesn't bother me at all. I don't feel threatened by it. It's just new. It's something new, the computer is new, and what you can do with it is new. The fact of having students who know far more about it because they have their own machine is a new element. It's not under existing procedures, because you're dealing with something that's new.

Q In what ways is it an advantage to have the [student coming to your room] to use the computer?

A If you have someone there who can utilise it, and do more with it, an experienced person who knows something about it, then I'm utilising what that machine can do. If I say "No" to him, "you can't do that," then I am not using that machine to its fullest capability. If that information can come from a student, great! More power to [him/her].

How do we interpret what Mr. Coulomb has said? Mr. Coulomb has found that some of his students know more than he does about computers. He said that what the students are able to contribute is not clear to him, and since it is important for him to keep up the momentum of his own teaching, how to manage the contribution of computer students who are computer literature is problematic. While he wants the computer to be used to its maximum capability, he does not know what its capabilities are.

Mr. Coulomb faces a technology whose possibilities are unkown to him. Also, for him the rules for exploiting those possibilities are not yet established. Questions which concern him include how much will he need to know about computers and what is it that he must know? For example, Mr. Coulomb is concerned about his ability to use the equipment.

Q [what about] removing a stuck disc from the disc drive?

A Yes. That is the same as [when] the film projector breaks in the middle of the lesson. It's something you fix. If you can fix it, you go on. If you can't, you stop and go on with something else. It's more like a mechanical breakdown or something, like any piece of audio-visual equipment I would use. I didn't see it as a very important item myself.

Q You didn't relate to it at all to classroom management or formal teaching. Does it call for particular procedures to be set up so as you know what to do in those circumstance, or is it not related to this at all?

A It was just a mechanical breakdown. Normally I don't have the students running the machinery. When something breaks, I say, "O.K. We'll try to fix it," and if we can't, I say, "O.K. guys we just have to leave it."

Mr. Coulomb saw the malfunctioning computer as if it were just a broken machine or a lost book. He does not focus on the interaction between child and machine. What the program on the machine is doing is not his concern. That is not what is malfunctioning. It is the machine itself which is broken. He sees the program not as a "teacher," but as an activity dependent on him, in the same way in which a film he shows is dependent upon his management. Were the program seen as a "teacher," then the stuck disc would have implications beyond ordinary machine malfuncitons. But this does not seem to be the way Mr. coulomb views the computer. He incorporates the machine into his ideas about other classroom resources, pending, perhaps, additional information about its possibilities for teaching, which are as yet unclear. He is not sure what manner of machine with which he is dealing. Certainly he is not thinking in terms of "microworlds." The world which matters for him is his own classroom.

Mr. Coulomb is concerned about instrumental matters. Can he be sure that work with the computer will have the same flow as other work which he manages? How much effort will be needed to keep an eye on what is happening? Close supervision is required, and he may have to fix the machine. Being stuck, for him, means being faced with a familiar technical problem -- a broken machine. He doubts his capacity to manage computer based learning. He worries that some students understand the machine in ways which he does not and that it is not clear what students expect of him.

Mr. Coulomb's relationship to the machine is ritualised. The machine is something to be cared for by protecting it from students. It is like a fetish. If the machine is well cared for, it can work hard on behalf of the class. He, himself, has to be prepared to work the machine properly. Thus, the computer is a machine like other classroom machines (film and overhead projectors). It is a tool he can use to gain instructional advantage in his classroom. Since the computer is a machine like the others, his and his students' relationship to it are no different than other machines. The computer joins in with the other machines as something at Mr. Coulomb's disposal. He remains teacher; machine remains machine. There are no fantasies here about worlds beyond his classroom which can be approached through a machine.

How does he cope with this machine? Familiar routines are extended to make use of the computer and students are monitored as before. Rewards are distributed as usual, and some children show off their special talents. Students make unacceptable demands, and equipment still has to be fixed. But what do you do if the students are stuck and you can not help?

The programs may make it difficult for teachers to help their students because the "pages" of the computer are not on view. What if the computer is teaching something the teacher does not teach? What if the computer is asking for types of intellectual activity the teacher does not stress? What if the students ask the teacher for advice about a program, thereby placing the teacher in a secondary role? Who is managing whom in this case? Who is doing the teaching? What does it mean to use the potential of the computer fully? What is its potential? Mr. Coulomb has not looked through the looking glass. Perhaps he is afraid of what he will find there.

Judging from what Mr. Coulomb said, these questions are unresolved. At risk are the expressive elements of his work. How will he cope with the possibility that his students might not find him helpful, reliable and capable of unravelling knots and keeping things smoothly running. Will the computer undermine his influence in the classroom?

His influence is fundamental (Olson, 1982). Through his influence he shows students what is important ot learn, as well as helping them learn it. He is able to do this because he knows how to diagnose learning difficulties and remedy them. His standing in the eyes of students depends on these abilities. In order to be helpful, he has to construe ambiguous classroom events quickly. Learning with computers makes it more difficult to do this, as we saw. There are four questions which he is asking about his experience: "What are students learning from the computer? Is it useful? What progress are they achieving when they are working with computers? How can I help?"

His routines assume that these questions have an acceptable answer. It is this set of questions which is brought forward when he reflects on his experience with micromputers. It is from understanding how he answers these questions that he could learn more about himself and his practice — more about the ethos (the moral universe) in which he works. But to do that, he would have to look beyond the surface events of his practice. He would have to look through the looking glass.

The Spirit of Inquiry in Mrs. Melville's Class

During our observations, Mr. Coulomb was only just beginning to imagine how computers would work in his classroom. Mrs. Melville, on the other hand, was already giving over some of the work required by the curriculum to the computer. She was beginning to see where this could lead her. The class was a grade 9 (the 10th year of school in a K-12 system or about age 14). We joined her class as the pupils were commencing to the program, "Oil Search." The class was studying a unit on primary resources. The unit was in a section of study within the larger topic of mining in a

Canadian geography course

In the computer simulation game, 'Oil Search,' students are organised into a number of groups Each group starts with $900 capital, and the group is presented with the choice of either paying for information about the nature of the strata underlying a hypothetical parcel of land or paying for exploratory drilling The students can ask the computer program for a seismic study, a rock density analysis or a core sample Each of the three alternatives gives information about the oil potential of the land, and it is informatoin which is needed to decide whether to drill and where to drill The group can, at any time, decide to sell its oil in order to fund further search and drilling activities

This was the second time which Mrs Melville had used the program, 'Oil Search,' and she knew what to expect She reported that

> In order to find the oil, they [the students] had to learn the concepts They had to know different types of oil traps, and they had to know what kind of rock to look in They learned that better than my sitting up there saying, 'Okay this is an oil trap This is what it looks like Let's copy it down' They knew if they didn't know what it was they were going to miss where the oil was It was competitive

Mrs Melville described how, on the first day, the noise level among the students had been high They were excited about playing the simulation game because they had heard about it from the previous year's students By the third lesson, which we taped, the change-overs were smooth and relatively quiet We saw one group fall behind the other groups in the competition to find oil because it insisted in drilling for oil before it had sufficiently analysed the rock where it planned to drill The group had still not hit oil, even though other groups had Mrs Melville asked the group what it had been doing and guided it towards more fruitful approaches to exploration

The preparatory work which the students did before using the computer program was especially important to her in her thinking about the unit, as was the work which the students did after completing their sessions on the computers She reported that

> you've got to have something else to keep them busy in between rather than just the computer program because it doesn't keep them busy If they have something else that's related, a set of exercises of some sort then they keep themselves busy
>
> They work quite well in groups You always get the odd one One kid was a little Hitler, literally He was going to do it his way, but fortunately in the group there were others who were not quite as strong, but equally as persuasive in a nice way That group had problems but it was mainly the make-up of the proup, and I didn't know the kids that well at the beginning, and that was very close to the beginning I didn't know how they interacted on a normal basis

Another group struck oil, but were very subdued about the find because it did not want to alert the competition Mrs Melville said that the groups typically became very devious when they struck oil, one group attempted to hide information about a strike from the other groups

Mrs Melville described how initially she was frequently called upon to assist the groups, but later the students required less guidance

By the third lesson I was not called upon that often, the groups simply

> pressed on with the problem of finding oil. There was a lot of argument in one group, however, because they [sic] could not agree how to proceed. I had to put them [sic] back on track. One group were [sic] having difficulty plotting their [sic] graph and I went over to help. I was monitoring the group that was not doing well and sent over to them [sic] to ensure that the students were able to capitalise on useful information that would soon lead them [sic] to oil. I did not want them [sic] to "blow it."

Finally a group found oil, and much excitement was heard from its computer corner. It had found an oil trap and had to map exactly the location. But the group had to wait until the next day to drill and finally hit oil; Mrs. Melville wanted to make sure that the group did not lose the spot.

After the students had completed their work with the "Oil Search" program, the class discussed what it thought about the simulation and what it had learned about the techniques of oil drilling and the economics of the process. Mrs. Melville taped that discussion for us. The students made a number of points about the real world connections of the simulation and how unrealistic the price of oil was in the program.

New Games, New Rules

We asked Mrs. Melville to construe her experience of teaching with computers, and her response was as follows:

> Playing around with computers was a legitimate element of what students were doing on the computers but time was a problem. The programs take longer to cover the same material and there is still all the other material in the curriculum to be covered.
>
> Machine problems are less of a difficulty than student behavioural problems. A program problem is easier to deal with than the more ambiguous student problem in working at the computer. You never know what the kids are going to do but the ocmputer is pretty reliable.

Students helping other students was not seen as a problem because students more readily accept help from peers than from a teacher when they are stuck on the computer. They know who in the class can get them "unstuck." Without these knowledgeable students, Mrs. Melville said, things would be more hectic.

> When the students are first starting on the program and you've got six computers going, the problem is they do not read the information. If they would read the information they wouldn't have that problem. If one of the other kids comes over and says, "Did you read that?" it's much more effective than if I say it.

She regarded problems which students had with computers as ambiguous and hectic. She had to think about them more than she would with a simple mechanical failure. The unexpected problems, like students not getting on with the program, made things hectic, not the expected things, like the noise. As students became more familiar and confident with the computers, she regarded things as becoming less hectic, but individual problems still arose. Why a student is in trouble still needs to be diagnosed, and doing that is difficult, she said.

Using computers exposes her to risks of unanticipated problems and ambiguous situations.

> They see the program [and say], "That's great!" [They] put the disc in [and say,] "Tremendous, let's go!" It's a general problem and I think it gets better with maturity. It's a skill they can learn from computers. There is nothing wrong at the grade 9 level [the 10th year in school in a K-12 system, or about age 14] from expecting a kid to be able to follow instructions, provided they are well stated. That can be a problem too. [Then] if you don't do it, you don't get anywhere. The [advanced students] are just as bad as the [less able ones]. It's got to a point where students are saying to each other, "Did you read it?"

She said that they have to learn the value of reading the material, although sometimes they have to be left to learn it for themselves. Some deliberately ignore instructions and "play" with the program. For example, in the farming game, students grew potatoes in southern Ontario for ten years and made a lot of money, but making money was not the point of the exercise. They did not learn the geographical lesson and so were wasting their time on the computer, she said.

They also have to read the support documents carefully and find the information. Less able students do not do this. At first, the groups were too big; now she has them working in pairs because, "they don't have the confidence with the machines that some of the other kids have." For some students, working in groups is an especially good thing. She mentioned a girl who was repeating the year:

> Now this girl did it last year, she's repeating. She knows the procedure, and she has been good for them [the boys in her group] because they tend to be clowns. She's keeping them on track. It's good responsibility for her. It's good for her self confidence. She's guiding those two characters and they are getting somewhere.

Having a computer in her room creates situations which are ambiguous, take time to sort out and press upon her. There is no quick way around these situations. She has to move into close contact with the students, find out what the problem is and sort it out. She wishes that students would sort things out for themselves. Normally teachers can rely on students to do that when they are just using textbooks and other carefully "scripted" materials. Not with computers.

Computer based learning, however, disrupts that assumption and derails routines based on student ability to follow instructions within a known framework. Moving out of the known framework, in which the significance of activity is unambiguous, to the computer framework is difficult. The students have difficulty because they do not *read* the instructions, but they also have difficulty because the learning activity is itself taking place in an unfamiliar context. Well known routines which give significance to instructions do not exist, and students have to depend on the teacher to tell them in what direction to move. A new game with new rules takes time to understand.

Routines are very important to the teacher and the student. For the student, they provide a context for action. For the teacher, routines form a basis for coping with large numbers of students without having to give individual tutorials. The routine is the context in which the teacher can exert influence; it is the context in which students can make sense of what the teacher is asking of them. Routines take the place of tutorials. A tutorial is a way of placing activity into context — of giving meaning to instructions. Tutorials which concentrate only on the cognitive demands of an activity, while ignoring the need to place activity in a meaningful context, do not work well.

Teachers provide a complex system of cues which helps students stay on the right track. It is Mrs. Melville's teaching purpose which provides the context for "Oil Search," not the program itself. Students either approach Mrs. Melville for guidance, or they approach other students who have used the program previously.

Inquiry as Play

This is not to say that Mrs. Melvilles purposes are not problematic. She struggles with the fundamental ambiguities of computers, but especially with the question of the proper use and purpose of the technology. In regard to this question, her attitude to "playing" with the computer is revealing. She does not like the students to "play" with the computer. When they play with it, she believes that they are not seeing the computer in the same way as she does and that this is wrong. Their "play," which for some would be exactly what the students should be doing, is not what the computer is for, in her view. The computer is to help her teach the basic facts of the subject in a more interesting way. Yet she is disappointed that students did not go beyond the facts to larger issues, doing what is essentially "playful" -- something she does not encourage. What her routine approach "says" about what she believes is at odds with her expoused beliefs. She could learn from an analysis of this paradox.

Mrs. Melville has ritualised school work as a form of text "worship" in which she regards the serious business is that of students deriving messages from the text. In her view, the process of deriving messages from text helps students become responsible though sustained and patient application. She makes sure that her students understand how serious the text is, and they, knowing this, apply themselves. The computer introduces a new element into the process, which upsets the serious work with the text. The computer encourages "play" and inattention to text. It invites activities which are "playful" and which could, were she not so concerned about the text, support more free flowing discussion and inquiry learning. She says she wants to do that kind of teaching (i.e. the kind which encourages inquiry learning), but her belief in the importance of text is at odds with this more "playful" approach.

The computer is not essential for reflective processes to occur, but given the optimal circumstances, t has the potential to stimulate valuable reflection. Those optimal conditions require that a teacher helps *students* explore the significance of their computer experiences for their ideas about the world. They also require that someone help *Mrs. Melville* explore the assumptions of her professional practice and her views about the spirit of inquiry.

Through the Looking Glass

The recovery of what is "said" in classrom through interpreting the routines we find there is what I mean by "thick description." It is an ethnographic process in which the significance of cultural performances are analysed. It is the journey through the looking glass. I take these routines, which we have only glimpsed here, as being significant processes of teaching. They can be properly called rituals without stretching the meaning of that word too far.

It is because microcomputers have great power to dislocate those rituals that they are so disconcerting to people who live in classrooms, and so interesting to the visitors. Both can learn from the disquiet which we have witnessed in our investigations when teachers work to assimilate innovations (in this case new technologies) into the order of their classroom -- into the rituals which they conduct everyday.

It is through such disclocation that we can sense the genuine and authentic methods of classrooms. Routines and methods constitute an ethos, and it is through knowing what that ethos is that we can contemplate where tradition is taking us in education and what we think about the worth of that direction. The business of reform should not be one of abandoning traditon. Rather, the proper business of reform is to know tradition, to judge it (i.e. evaluate it) and to improve it. "Thicker description" helps us to do just that by putting both teachers and outsiders "in the picture." Once there, the journey outward through the looking glass to new traditions becomes possible.

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An Educology of Deciding on Special Education Placement: More Show than Business?

Y. J. Pijl
Instituut voor Onderwijsonderzoek,
Rijksuniversiteit Groningen
Groningen, The Netherlands

ABSTRACT

A hypothetical report was developed very similar to the reports which school administrators and psychologists usually write on behalf of the multidisciplinary team which is responsible for the decision on admittance of children to special education programs in The Netherlands. The characteristics of the described child were based on the median, mean or mode values (measures of central tendency depends on type of measurement scale) of the variables in a large sample of existing reports. Four child characteristics were systematically varied: sex, academic performance, type of learning problem and IQ. One more characteristic of the report was manipulated by the researchers. Half of the reports contained very detailed information about subtest and test scores, siblings, medical history, observations during testing and so forth. The other half of the reports contained only the reasons for referral and the WISC-R IQ. A random sample of 183 multidisciplinary teams associated with EMR (emotionally/mentally retarded) and LD (learning disability) schools studied one randomly assigned version of the report and were asked to decided on placement in an EMR school, a LD school or returning the child to the ordinary primary school. Results lead to the conclusion that even fewer child characteristics than expected contribute to the placement decision making. Only IQ affects the average placement decision substantially. Furthermore, a strong direct influence of the type of the school to which the child is referred on the placment decision was demonstrated regardless of any child characteristics.

Introduction

In the Netherlands, children who are referred to special education services by their primary school teachers are entered into an extensive assessment procedure yielding the final placement decisions. The assessment as well as the placement decisions are the responsibility of the special education school to which the child is referred. The two major school types in special education in the Netherlands are schools which are supposed to specialise on emotionally and/or mentally retarded (EMR) children and schools which specialise on learning disability (LD) children.

Once a child is referred to one of these schools, that school assesses the child and most often chooses from three options: categorise the child as

EMR, LD or ineligible for special education. When the child is categorised as EMR or LD, the child is either admitted or sent to a school of the other type according to the type of school to which the child was referred originally.

Sharp criticism of the process of solving this and similar decision problems has arisen these last few years in the Netherlands, the USA and elsewhere. Three main themes in this criticism are the technical inadequacy of psychological and educational tests (Visser et al., 1982; Christenson et al., 1981), the lack of agreement on diagnosis and decisions (McDermott, 1980; Bus et al., 1986; Visonhaler et al., 1983) and the fact that data on the child are not used in placment decisions (Christenson, 1981; Ysseldyke and Thurlow, 1983) and IEP construction (Pijl and Rispens, 1981; Schenck, 1980). All critics ground their criticism implicitly or explicitly on the assumption that placement decisions are important decisions resulting in large effects on categorisation, school career, treatment outcome and so forth. Several authors (Van der Wissel, 1979; Schroots, 1982; Baarda and De Zwaan, 1982) explain the internally invalid and inefficient placement decision making which arises from lack of clear cut goals and admission criteria in assessment. These deficiencies have led some authors (Ysseldyke and Algozzine, 1980; Van der Wissel, 1979) to question how decisions on placement are made and what the actual criteria are. The objective of this study is to test several hypotheses about the most important determinants of placement decisions.

Framework

The framework of this study consists of the findings in earlier research (Pijl et al., 1986a/b). It was concluded that special education schools gather much data in a rather unsystematic way. No explicit goals and admission criteria are set. No theories are constructed, and hardly any IEP's are written. Analysis of the files and records of referred children showed that most of this unstructured load of data is left unused. The child's characteristics which correlate in some way with the placement decision, prove to be sex, academic performance, type of learning problem (poor general performance versus poor reading) and IQ. Many other data mentioned in these files, like information about social skills, age, parents, concentration, IQ scatter, social economic status and so forth, did not relate to the placement decision.

Furthermore, a strong correlation was found between the referral decision and the placement decision: 88% of the children referred to a school of the EMR type were admitted; 82% of the LD referrals were admitted. This correlation could be explained by common causes for both referral and placement decisions: the characteristics/problems of the child. This explanation seems plausible, but it is not likely to be sufficient. Additionally one would expect placement decision makers to adopt earlier referral decisions.

These findings are consistent with other research results (Smith and Knoff, 1981; Ysseldyke and Thurlow, 1983). Since the afore mentioned conclusions are based on the analysis of existing documents in a rather tentative way and differed from other research results with regard to minor points, we felt the need to check these preliminary conclusions in a thoroughly controlled experiment.

Research Questions

The first hypothesis to be tested was that sex, academic performance, type of learning problem and IQ influence the placement decision. Another hypothesis was that the amount of information about the child does not influence the placement decision, but only raises the confidence of the placement decision makers in their decisions. Also the idea of a direct influence of the referral decisions on the placement decision was put to a test.

Method

A report was developed very similar to the reports which school administrators and psychologists usually write on behalf of the multidisciplinary team which is responsible for the decision on admittance and so forth. The characteristics of the described child were based on the median, mean or mode values (measures of central tendency depends on type of measurement scale) of the variables in a large sample of existing reports. Four child characteristics were systematically varied: sex, academic performance, type of learning problem and IQ. One more characteristic of the report was manipulated by the researchers. Half of the reports contained very detailed information about subtest and test scores, siblings, medical history, observations during testing and so forth. The other half of the reports contained only the reasons for referral and the WISC-R IQ. A random sample of 183 multidisciplinary teams associated with EMR and LD schools studied one randomly assigned version of the report and were asked to decided on placement in an EMR school, a LD school or returning the child to the primary school. Since the 183 multidisciplinary teams entail EMR school teams and LD school teams, the sixth independent variable consists of this distinction.

The dependent variables were the decision favoured by the responding teams and the subjective confidence in the proposed decision. Since the first dependent variable is measured on a nominal scale, the resulting cross tabulation was analysed by means of a log odd model. The second one is measured on a ratio scale (0-100% trust in one's own decision). For that reason, the influence of the six independent variables on confidence was estimated using ANOVA.

Results

Determinants of Placement Decisions

No interactions between the independent variables were found. Two main effects prove to be relatively large and significant. High IQ values led to more LD school and primary school decisions, while low IQ values induced more EMR placements. The main effect second in magnitude was the effect of the school type of the team's school. EMR school teams decided more often in favour of EMR school placment, when compared with LD school teams, which favoured LD placements. The school type variable did not affect the number of selections on the primary school alternative.

A third significant but small main effect consisted of the positive correlation between the EMR/LD decisions contrast and the poor general performance/poor reading contrast. All other main effects could be removed form the model. This strongly reduced model fitted the data quite well (Chi squared = 9.8, df = 8, p = 0.28).

The following tabulation contains the joint effect on the variables IQ, type of learning problem and school type on the distribution of the multidisciplinary teams over the levels of the independent variable, "placement decision."

Table 1

The Estimated Distribution (Percentages Row-Wise) over LD, EMR and Primary School

WISC-R IQ	Type of Learning Problem	Team School Type	Placement Decision LD	EMR	Primary School
High = 101	Reading	LD	91	1	8
		EMR	79	5	16
	General	LD	76	2	22
		EMR	53	10	37
Low = 84	Reading	LD	81	16	3
		EMR	44	52	4
	General	LD	59	34	7
		EMR	21	73	6

Confidence in Placement Decisions

An ANOVA run was executed to test the hypothesis that detailed information about the child induces more confidence. Since the power of the tests is 0.90 when a difference between groups equal to 10% is expected, $a = 0.01$ was justified. Table 2 contains the tests of the main effects of school type, amount of information available, the child characteristics and tests of all second order interactions. As expected a significant amount of information effect was found. None of the other effects proved to be significant. However the size of the amount of information effect was rather small. The mean confidence of the teams possessing detailed information about the child was 79%, while the mean confidence of the teams provided with minimal information was 72%

Conclusion

These results lead to the conclusion that even fewer child characteristics than expected contribute to the placement decision making. Only IQ affects the average placement decision substantially. Furthermore, a strong direct influence of the type of school to which the child is referred on the placment decision was demonstrated regardless of any child characteristics. This conclusion contrasts with the fact that the average placement decision maker gathers lots of data on the referred child. One explanation for this discrepancy is the decision makers' need for confidence in the decision. By doing anything one can possibly do, one would raise confidence in one's own decision making. The afore mentioned results on the effects of the availability of detailed infromation supports this theory somewhat An additional explanation is based on the fact that only the parametres of the average placement decision were estimated Any decision maker may use in a very consistent way many data on the referred child, though not using the same data and/or using them the same way other decision makers do The between decision makers variance in the choice, interpretation and processing data would explain why many child characteristics are unrelated to the average placement decision This interpretation of the research results also signifies that there are no generally accepted criteria for admission to Dutch LD and EMR schools Parents and primary school teachers should know this, and they should be aware of their responsibility for decisions on referral because referral decisions do not seem to be corrected or assessed, but rather simply adopted

Administrators should worry about the optimal use of their budget The present day quality of assessment in placement decision making could easily be maintained by restricting the time consuming testing, describing and reviewing a referred child (12 hours) to a single IQ test (2 hours) The rest of the show may be skipped until agreement on the goals of special education and on the task of assessment in the process of referral and placement is reached

Table 2

Tests of Effects on Confidence in Placement Decisions

Source	df	F	p
Grand mean	1	3092 6	00
A IQ	1	5 9	02
B Type of learning problem	1	1 3	26
C Academic performance	1	0 0	87
D Sex	1	4 9	03
E School type	1	3 3	07
F Amount of information	1	7 7	01
A x F	1	2 1	15
B x F	1	0 5	48
C x F	1	4 2	04
D x F	1	5 0	03
E x F	1	1 7	20
A x E	1	5 2	02
B x E	1	0 4	51
C x E	1	0 0	85
D x E	1	0 8	39
A x D	1	0 5	46
B x D	1	3 4	07
C x D	1	0 7	42
A x C	1	2 4	13
B x C	1	0 5	50
A x B	1	0 1	76

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The Educology of Literacy: Fostering Reading and Writing in Developing Countries

James Quisenberry and Margaret Matthias
Southern Illinois University
Carbondale, Illinois, USA

ABSTRACT

In spite of persistent and valiant efforts to establish universal literacy, parts of the third world seem only to be maintaining the status quo which was achieved in the 1960s and 1970s. In many areas, the actual proportion of the population which is literate is even less in the late 1980s than it was in previous decades. An important factor which impedes progress in engendering literacy is the absence of a print oriented culture -- the dearth of an appropriate literary cultural and social context of printed materials in one's family and local community which supports and makes evident the utility of literacy. More effective use needs to be made of community resources as sources of printed materials and as origins of a print oriented culture.

Introduction

Literacy seems an impossible dream for millions of people in this world. Without literacy skills, many aspects of "the better life," including most levels of formal education, are entirely unavailable. Toffler in 1980 noted that three quarters of the world's population were living in relative poverty, and among those, approximately 550 million were illiterate. World Bank estimates in 1983 indicated that the adult literacy rate in Africa, the Middle East and South Asia was at 40.5%. Present indications are that in spite of extensive funding of primary education projects in developing nations by agencies such as the United States Agency for International Development (USAID), UNESCO and the World Bank, few inroads are being made into the task of eradicating massive illiteracy. Even with the substantial rate of resources presently being allocated to education in developing nations by the governments of the nations themselves and by international development agencies, there is the general recognition that for the foreseeable future, primary school may be the only opportunity a child will have to achieve literacy and that many will remain illiterate.

The Natural Human Capacity to Learn Language

In our work and investigations in literacy development, we have visited many primary schools of varying means and sizes around the world. Some have been very well furnished, while some have been lacking in even the most fundamental of amenities and necessities. But, even with such variety, each school has shared with all others the common qualities of sound and movement, as children have gathered together to study and learn. It is this very quality of sound of children talking which represents the proof of each child's tremendous innate capacity to learn language, a capacity already tested and proven as each child comes to school having competently acquired skill in a mother tongue, the language spoken by the family and group which has nutured the child since birth. One might well describe language learning as an act of natural, innate genius achieved by each and every child. We adults, teachers and educologists have sometimes ignored the implications of children's language learning skills, *viz* that every child can and does learn language. According to Smith (1979)

> This belittling of the innate capacity of children to learn is largely based on the unwarranted assumption that anything that is not specifically taught cannot involve much learning [p. 7]

Since children are seemingly not formally instructed in their initial learning of language, their success at having learned a language at their mother's breast is ignored by educologists and teachers as not being a remarkable achievement. In the process of infants and young children learning a mother tongue, adults have (usually unwittingly) made themselves available as models of language and as sources of information for children who try out their early ideas about how language works.

The way in which children naturally and spontaneously study and learn language in their initial years from ages 0 to 5 years holds major implications for effective ways of involving children in the processes of studying and learning to read and write in later years. The natural process of initial language development of infants and young children has specific educological implications for solving the type of literacy problems peculiar to developing or third world countries.

Stages in Language Development

Stages in language development have been variously mapped. For example, one such map has been developed by Forester (1980), who identified six stages in the development of language production: babbling, one word sentences, two and three word sentences, self programming of simple rules, over generalisation of acquired rules, and adoption of more precise speech. Taking a perspective which includes a consideration of the language environment as well as the language user, we (1986) have summarised the language learning processes as occurring in four sequential stages:

1. Immersion of the learner in a language environment (the richer and more varied, the better, in the sense of being more favourable for language development).
2. Nonconscious (automatic) internalisation of the rules and operations of that language,
3. Practice or exercise of the internalised (assimilated) elements of language by the learner in personally meaningful situations, and
4. Continuous and ongoing refinement of language competence, based on meaningful feedback from older language users.

We judge these steps to be hierarchical. The first step is a necessity for the second, the second for the third, and so forth. When an individual enters into the fourth stage, the processes in the previous three stages continue to operate through the individual's lifetime and experiences within a given language system (i.e. mother tongue). Within this schema of language development, little importance is attributed to imitation as a major mechanism for acquisition of language proficiency, although it needs to be said that in sound production and in some relatively trivial phrases and sentences, imitation does have a degree of importance. In all stages beyond babbling, the child is predicting which sounds, words, phrases and grammatical elements might apply to its communication needs. The child tests those predictions, retains or rejects them and adapts where necessary. The main motivation in learning language is the fundmental need to communicate. Learning (or internalisation) of language is successful to the degree to which the individual finds her or himself immersed in the language of the culture from which the language derives.

Print Oriented Cultures and Oral Traditions

Some cultures are print oriented, and some are not. That is, some cultures have traditionally attached a great deal of importance to the printed word, and others have used oral language as the principal linquistic medium for records, preservation of knowledge and literature, as well as for day to day social intercourse. Studies of how children in print oriented societies come to terms with the conventions of print show similar developmental stages (DeFord, 1980). Forester (1980) has distinguished five stages in the learner's progress towards competence in printed language: scribbling; one letter spelling; two and three letter spelling; self programming of simple rules; and overgenralisation of acquired rules. Just as in they do in their acquisition of oral language, children seem to make predictions about their early attempts at written language on the basis of their experiences. They then test these predictions, reject or accept the results and modify their written language accordingly. In print oriented societies, the motivation of learners to comprehend messages in print is based on personal need. That motivation is facilitated by the many and varied experiences with print. Print plays a continuous and prominent role in the environment in which they live. Their society considers it as important for them to learn to read and write as it is for them to comprehend oral language and speak fluently. These learners, reflecting their culture, view reading and writing as highly important, functional, entertaining and well worth the effort. Children's understanding of reading in this light is essential motivation to learn how to read (Smith, 1979).

Motivations for Achieving Literacy

In contrast, the difficulties of motivation are obvious for children who are charged with the responsibility to learn printed language, but whose culture does not have a strong printed language tradition. In many third world countries, the ability to read is important to learners only insofar as it is the sign of an educated person. This is a relatively abstract educational goal for young children to understand. For the majority of youngsters, particularly in rural areas, reading is functional only in the school setting. Print serves the rituals of the school, but not the rituals of the family, the village or the community. Typically, extremely limited print resources exist in the community. The ideal functionality of print, that of extending and facilitating communication, is not a feature which is well integrated into the culture (and hence, into the lives of the children). Any experience of variety in content and style of language in print is likely to occur for the children only in the school texts. These texts are not usually entertaining, and they typically have little concrete relevance for the lives of the children who use the texts. With all these considerations, educologists have justification in doubting whether children in developing countries seriously regard the ability to read as worthwhile, since the children are unlikely to have deep convictions about the need for reading as a communication process. They simply are not immersed in print, and they are not aware of its functionality, so it holds little or no importance for them.

The Process of Constructing Meaning from Print

A review of what is involved in the reading process further illuminates the types of problems encountered by third world children in their attempts to learn to read. One might properly say that all learning is an attempt to transfer uncertainty into familiarity. An analysis of what is involved in the process of learning to read illustrates this. Goodman and Goodman (1977) suggest that there are three major cueing systems used by mature readers as they bring meaning to the printed page: grapho-phonic, syntactic and semantic.

The grapho-phonic cues are those relationships between sound and print which an experienced reader recognises as the printed page is viewed. The conventions of print are recognised, such as where a sentence starts and where it ends, the spaces between groups of letters which indicate the beginning and end of words, etc. The beginning reader in most developing countries has little or none of this knowledge. This cueing system typically has not been available to the child because of the absence of print in the child's cultural environment out of school. The difficulty can be observed in primary classrooms in many developing countries. "Reading" aloud is done in large groups through choral chanting of the contents of the text. Though the chanting is done in unison, some children will not be on the same page as others, and an occasional child can be seen "reading" with the book upside down. The point is clear that it is important in readiness and beginning reading experiences to structure the environment so that the learner has many opportunities to internalise the basic conventions of print.

The syntactic cueing system is based upon the reader's internalised knowledge of language patterns in a mother tongue (the total grammar, nonconsciously internalised from linguistic transactions with parents, family and others). On the basis of how the material "sounds" as the child reads a portion of print, the child will be able to assess whether it makes sense. For example, as the child tries to read, "The boy stroked the pony," the word, "stroked," may be new, but it is clear to the child that the boy must be doing something because of the word order of "boy stroked," the verb ("stroked") following the subject ("boy") must be expressing an action of some kind according to the syntatic cueing system. The prediction which the child makes as to which particular action the boy performed depends upon the third cueing system, the semantic. This system comprises the learner's world of meaning. From experience, the child may then predict what the entire sentence means.

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A problem for many children in third world countries is that the language of instruction may not be their mother tongue. In Nepal, for example, where the language of instruction is Nepali, more than 40% do not speak Nepali as a mother tongue. Still, they are asked to try to become literate in a language with which they may be relatively unfamiliar. Those whose mother tongue is Nepali have an extensive knowledge of their language, and they may use it to powerful advantage in becoming literate through being able to predict successfully what makes sense in reading Nepali. Advocacy of primary teaching in the mother tongue is readily available in the relevant literature, but setting the polemics aside, there is not much in the way of reports of empirical research. It is certainly a reasonable proposition that beginning reading activities should focus on experiences which use the child's own language as a print base. This is not a new idea. Sylvia Aston-Warner's work with Maori children two decades ago still provides excellent ideas in this area (Aston-Warner, 1963).

The semantic cueing system only presents difficulty for children if the content, i.e. the referents of the reading materials which the children encounter, are so far removed from their world of experience and skills that comprehension is unlikely. Again, the obvious implication is that experiences with print should be provided in direct connection with the children's immediate life experiences, and particularly those experiences involving oral communication. In fact, sound educological principles for effective reading instruction require it. Reading, in the sense of both content and process, must be seen by children as important, functional, varied in content, style and language, entertaining and worth the effort. It is important that beginning experiences with print include the use of meaningful material which is representative of the child's primary language. Thus, it is necessary for the society which has literacy as a goal to make a wide variety of print resources available. Learners must be presented with opportunities to see the practical uses of print. These experiences are the basis for understanding the conventions and functionality of print. In addition, print materials which focus upon content familiar to learners naturally enhance children's beginning reading experiences.

The Necessity of Building upon the Known

Our position is that the process of providing learning experiences for the purpose of developing the ability to read should build upon and use what children know about their language and the sense which they have already made of the world around them. With this in mind, it becomes obvious that there is a rich resource which is existent in all countries and ethnic groups and which is readily available for printing: the oral folk literature of the culture. Every culture has its folk stories, sayings, chants and the like, and they are excellent raw materials for helping children make the transition from oral language to print literacy. Sound reasons for transforming oral folk literature into print include the following (Matthias and Quisenberry, 1986: 188-189):

(1) Much of the folk literature is already familiar to the children, with whom it has been shared orally. Most children in third world countries still have access to people who perform the role of story teller, e.g. older siblings, adults or older persons who have much time

and patience to share tales from a vast repository of the area's folk lore (Pellowski, 1981).

(2) The traditional stories from the oral literature have a psychological value for the children. Folk tales have a variety of functions. Their appeal "seems mainly to lie in the archetypal patterns of people and problems they present" (Baker, 1981). Bettelheim (1977) points out that the very nature of the folktale enables us to identify or empathise with the thematic meaning of the tale. He comments that "while some literal-minded parents do not realize it, children know that whatever the sex of the hero (or animal type), the story pertains to their own problems" (p. 226). The superhuman and courageous deeds of legendary characters not only reflect the heritage of a people; they provide children the psychological means of coping with a constrantly changing and confusing world.

(3) The stories have cultural value. Relevant to this point are the remarks of Randel Helms (1976) that "Cultural ideas are formulated and understood most efficiently in myths ..." (p. 132). Folk tales express the socio-religious beliefs of a culture. Even though the historical reliability of stories about legendary heroes may be reasonably doubted, the values inherent in the tales mirror the values held important in the culture which has generated them. Often folk tales are highly moralistic in reflecting either socially acceptable or unacceptable behaviours in the hero, heroine or villain of the tale. Over simplified notions of good versus evil are particularly appropriate for children in primary (or elementary) grades. Appropriate to this proposition is the work of Kohlberg and Turiel (1971) with moral reasoning among young children. They have indicated that young children have difficulty understanding elements of a moral dilemma dealing with "shades of gray" between the dark of evil and the light of good.

(4) Many folk tales are short, exciting and to the point. The continuous transmission of folk tales from generation to generation is evidence enough for their entertainment value. To be maintained as part of the oral tradition, the tales have needed to be high in interest value and short enough to be remembered easily and recited in one listening session. They are also simple enough to carry the meaning from unsophisticated teller to uneducated listener.

(5) Folk tales are simple in language and structure and usually repetitive, and they are always true to the spoken form of the langauge. In the 20th century, efforts have been made in many countries to develop books for beginning readers which include a controlled vocabulary. Educologists of reading have studied verbal and reading patterns of children at different levels of reading, and they have derived various formulae for specifying the controlled vocabulary. However, they have in reality not improved upon features which are inherent in the literature of oral tradition. Because of the simplicity of the language and the form of traditional oral folk tales, the conversion of the oral literature to printed form makes the learning of a "controlled vocabulary" unnecessary for beginning readers. For the beginner, adaptation of the most repetitive of traditional folk tales to the printed form makes for easy and appropriate initial reading material. Indeed,

Rhodes (1980) in her study of beginning readers, has documented the success of using predictable and repetitive traditional tales in teaching children to read.

Forms of Inexpensive Printed Materials

In developing countries, the costs of paper are typically prohibitive. One way to overcome this difficulty is to publish traditional folk tales in the form of "chapbooks." Chapbooks foreshadowed the development of the 10 cent novel in Europe and the USA and of comic strips and comic books (Huck et al., 1987). As early as the 1500s, these crudely constructed but very popular print sources were published and marketed in large quantities, usually as 12 to 16 page booklets. Because of their low cost, ease of reading level and popularity of content, chapbooks were accessible to children as well as adults (Sutherland and Arbuthnot, 1977).

Conclusion

In conclusion, the fostering of an understanding of the functionality of literacy requires that basic expectations for the uses of literacy must be present within the children's family and community. If they are not present, then the expectations need to be developed. These basic expectations are best achieved through contact with print. Thus, the production of a wide variety of print resources is essential for the development and maintenance of general literacy in a nation. In schools, the daily production of print as it relates to the children's oral language and their experiences is equally essential. Wider use of print in the communities should be encouraged for transmission and documentation of important news items, for shop and street signs and for other basic intracommunity communication. In other words, print as a source of information and enjoyment needs to become a more active variable in the literacy education of the targeted region. As pointed out already, the folk literature of a culture could provide a particularly relevant and enjoyable print resource for children and adults who are learning to read. The very nature of the tales makes them appropriate both in content and style. The resource is there, it needs only to be utilised.

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Book Reviews

Teachers' Thinking: Perspectives and Research. Åsmund L. Strømnes and Nils Søvik (Editors). Trondheim: Tapir, 1987. Pp. 199. Paper.

Teachers' Thinking is a product of an international conference held at the University of Trondheim (Norway) in December, 1986, in which participants from Scandinavia, the UK and the USA shared their insights into relationships among teacher thinking, classroom practices, models of teaching, school centred innovation, instruction, therapy, reflective teaching practices and teaching knowledge. The work consists of contributions of authors from Scandinavia and the USA. The contributors include Bjarne Bjørndal (University of Oslo), Sigrun Gudmundsdottir (Stanford University), Lee Schulman (Stanford University), Ingrid Carlgren (University of Karlstad), Anne-Marie Søderberg (University of Copenhagen), Karl Øyvind Jordell (University of Tromsø) and Margret Buchmann (Michigan State University). The introduction establishes the theme and provides a summary of the subsequent six chapters. The work addresses the topics of teachers' evaluations of pedagogic theory systems, pedagogical content knowledge, school-centred innovations and teacher rationality, the teacher's role in education and therapy, the forces which act against teachers as reflective practitioners and, finally, how teachers' knowledge guides them in their teaching.

Teachers' Thinking is clearly an educological work in that its discourse focuses upon the relationship of means and ends within the educational process. Generally the terms 'pedagogy' and 'pedagogic' are used by the authors in the sense of 'educology' and 'educological', i.e. meaning respectively 'knowledge about education' and 'relating to education'. However, from time to time, 'pedagogy' is used in the work as a synomyn for 'teaching', and this ambiguous use of the term fails to maintain the clear distinction between the process of teaching, on the one hand, and warranted assertions about the process, on the other (i.e. the educology of teaching).

A second flaw in the work is that some of its contributors do not maintain a strict enough distinction between cognitive function, which is located in people, and warranted assertions, which are located in books. For example, in the chapter by Gudmundsdottir and Shulman, they equivocate between these two meanings by using the term 'knowledge' ambiguously to name both teacher expertise and warranted propositions. At one point they write of "the content of teaching, that is, the knowledge teachers teach students" (p. 51) and thus make the term 'knowledge' name warranted propositions. At another point they write that

> ... each of these teachers [in the research project] has developed a body of knowledge that is different from the content knowledge in English that one would find among scholars in the field. We call this body of knowledge Pedagogical content knowledge. [p. 52]

They thus shift the meaning of the term 'knowledge' from warranted assertions to cognitive function. It is evident in this second quotation that they have shifted the meaning because they are locating what they are naming "knowledge" in people -- the teachers and the scholars -- rather than in books. A second example is that of Margret Buchmann. In her chapter, she writes that "Knowledge is about different things and enables different kinds of action" (p. 171). Here she is initially using the term 'knowledge' to name warranted propositions -- such propositions can obviously be about different things. Later she writes that "People acquire knowledge through participating in cultural patterns ..." (p. 171). In this second instance, she is using the term 'knowledge' to name cognitive function.

Unfortunately, equivocations such as these detract from the clarity and, consequently, the cogency of any argument about teacher thinking. Also, it suggests that those who employ the equivocations are confused as to what they are writing about and as to what evidence is appropriate to adduce in support of their arguments. If in their research about teacher thinking, they employ critical categories which are neither mutually exclusive nor internally consistent, things can go terribly wrong. Upon such conceptual sand, it is impossible to build firm foundations for the "knowledge base" about teachers and teacher thinking which Shulman, Gudmundsdottir, Buchmann and others aspire to construct. Indeed, the meaning or set of meanings of the term 'teacher thinking' remain inadequately clarified in this work (and generally in the literature of teacher thinking), and this state of affairs mitigates against much progress being achieved in establishing reliable facts and fruitful theories about whatever the term might be naming.

One of the better chapters in *Teachers' Thinking* is that by Bjarne Bjørndal, who presents the results of an analysis of teachers' attitudes towards a range of models of teaching. He reports that the teachers within his sample found that models of teaching "have proved useful 'tools of thought' in the ... areas of planning of teaching, selection of content, clarification of aims, evaluation of teaching materials and methods" (p. 47).

Although there are admitted difficulties with ambiguity, equivocation, lack of clarity and a low degree of integration of the topics of the various chapters, overall the book is certainly worth reading. While it obviously holds special interest for students and researchers of teacher thinking, it has a wider appeal for teachers in training, teachers in service and those who have a general interest in educology.

Editors

Visions of Childhood: Influential Models from Locke to Spock. John Cleverley and Denis Phillips. Sydney: Allen & Unwin, 1987. Pp. ix, 166. $14.95 (Australian currency), paper.

John Cleverley is Head of the Department of Social and Policy Studies in Education at the University of Sydney, and Denis Phillips is Professor of Education and Philosophy at Stanford University. (By the way, in spite of the confusion of the book cover, which displays the name, *Dennis Phillips*, and the title page, which lists the name, *C.D. Phillips*, the correct version of the second author's name is *Denis* -- yes, with one *n* -- *C. Phillips*, or *D.C. Phillips* -- yes, D.C., not C.D., and Phillip with two *l*'s.) These two scholars are well known for the care which they take in their work to produce sound argumentation and appropriate documentation, and *Visions of*

Childhood is another exemplification of their well disciplined work It is a revision and extension of their previous publication, *From Locke to Spock* (Melbourne University Press, 1976) It presents historical viewpoints about the nature of children, appropriate ways of nuturing them and suitable methods and content for educating them, and it shows how one s conception of children and childhood determines much of one s views about the proper purposes, methods and content for the education of children It also shows that there is little new in contemporary views about children and education Each view has its historical antecedents and traditions The work addresses nine broad topics the ways in which conceptions of childhood have historically influenced conceptions of proper nuturing, care and education for children, historical views of the child as a product of its environment, as a being which should be free or constrained, as an evolutionary expression of the species of Homo sapiens, as a sexual being, as a being with genetically determined developmental stages, as a being who can be made fit for society (and indeed be used as a means to improve society) through education, as an organism which can be conditioned, as a thinking machine This book is very well written, and it is a joy to read The prose flows smoothly from sentence to sentence, paragraph to paragraph and chapter to chapter The style is characterised by a gentle sense of humour and a quiet authoritativeness, without a trace of arrogance The inferences are sound, and the documentation is beautifully woven into the argumentation As part of the fund of educology, it is clearly a work in historical educology and particularly in the educology of ideas This would be a very useful book to use in early childhood primary and secondary teacher education courses at the bachelor s degree level to construct an understanding of the historical context for contemporary views about children and education It also has applicability in introductory master s degree level courses where it is desirable for students to reflect upon their own (possibly unexamined) views about children and education School teachers of some years of experience would certainly find the book professionally stimulating and rewarding to read and parents would find it to be interesting and possibly even enlightening reading

Editors

Theories and Methods in Comparative Education. Jurgen Schriewer and Brian Holmes (Editors) Frankfurt am Main, Bern, NewYork, Paris Peter Lang, 1988 Pp 275 61DM, paper

Many who have written works which bear the name of *comparative education* have devoted considerable attention to the identity and distinctive characteristics of those works (e g G Z F Bereday, *Comparative Method in Education*, 1964, E J King *Comparative Studies and Educational Decision*, 1968, H J Noah and M A Eckstein, *Towards a Science of Comparative Education*, 1969) *Theories and Methods in Comparative Education*, edited by Jurgen Schriewer in cooperation with Brian Holmes, is another work in this tradition of delineating the boundaries and clarifying the identity of the products from research which bear the name of *comparative education* The book is one of the products of the Vth World Congress of Comparative Education (Paris, the Sorbonne, July, 1984), and it arose from discussions among some the of participants in the commission (coordinated by Brian Holmes) of the Congress which addressed the theme of 'Theories and Methods in Comparative Education.' Three major topics are addressed (1) metascientific discourse on comparative education, (2) analytic usefulness of concepts and theories in comparative education and (3) the disciplinary status of comparative education. In connection with the first topic, Erwin Epstein describes how different approaches to research (positivist, cultural relativist and phenomenological) lead to widely divergent views about what constitutes comparison, while Jurgen Schriewer develops an argument for a set of criteria and concepts which can be used to resolve the apparently conflicting viewpoints about the proper purposes and methods of comparative studies of education. In addressing the second topic (analytic usefulness of concepts and theories), Le Thành Khol analyses some of the conceptual problems which contribute to the difficulty of undertaking inter cultural comparisons of the educational process; Brian Holmes reiterates his argument for the problem solving approach as a research paradigm for comparative inquiry about the educational process; David Turner presents an argument for using an interactionist framework (vs a deterministic one) in the analysis of educational behaviour, and Harold Noah and Max Eckstein offer an explication and assessment of dependency theory in terms of its contribution to comparative analysis of education. In treating the third topic (the disciplinary status of comparative education), Carlos Olivera presents an argument for conceiving the discipline of comparative education as comparative educology and explicates the kinds of knowledge implied by comparative educology. Finally, Ludwig Liegle argues for the importance, in the research of comparative education, to include major studies of the broad context of culture and socialization within and outside school systems (p 225).

This book is a welcome addition to the literature of comparative education, and it is an important work for both educology and comparative educology. As Olivera notes (p 215),

> Without comparison, we can gather ample knowledge of the particular, but we will have no science — which by definition is only of the general. That is why it has been said with some plausibility that in truth all educology is comparative by nature.

It is a book which has obvious appeal for students, lecturers, professors and researchers in the specialisation of comparative education (or in Olivera's words, comparative educology). It is also a work which has some valuable insights to offer to students and lecturers who are struggling with the questions of what is the nature of research about education and what research paradigms are appropriate to use in bringing adequate resolution to research questions about the educational process.

Editors

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from an Educological Perspective

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning process, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counselling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society, not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative), empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding towards several ends, e.g. towards heightened sensitivity for educational situations, effective participation within educational situations, the articulation of sound theory about educational situations and resolution of problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counselling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical; experimental and non-experimental; historical and philosophical; jurisprudential, interpretive, critical and evaluative; scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are

published. Contributers seeking publication of manuscripts should submit an abstract (100-200 words) and four copies of the manuscript. If the manuscript is available on a 3 and one half inch disc for Apple MacIntosh (Macwrite), please send a copy of the disc as well. Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 inch) paper with uniform margins (3 cm or 1 inch both sides, top and bottom). To ensure anonymity in the reviewing process the author's name should appear only on a separate title page. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on the first page. The length of manuscript should range between 5,000 to 15,000 words. The bibliography should be arranged in this form: Author (date) Title. Place: Publisher. Referencing in the text should be in this form: (Author, date: pages). Footnotes of explanatory text should be placed at the end of the text, but before the bibliography. Diagrams and charts should be camera ready for printing on offset.

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions. The educological perspective in discourse treats the educational process as the central concern (i.e. as the dependent variable) of the problem being addressed in the discourse. The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic, empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions. The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process.

For authors seeking further guidance as to what constitutes educology and the educological perspective, two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C.: University Press of America, 1981) and in "Education, Educology and Educological Discourse: Theory and Structure for Education and Constructive Action in Education" (J.E. Christensen, *International Journal of Educology*, 1, 1 (1987), 1-32).

Manuscripts, editorial correspondence and inquiries about submissions should be sent to:

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International Journal of Educology, 1990, Vol 4, No 1

Editorial

Three Critical Distinctions for Advancing Educology

Thirty years ago as undergraduates at the University of California in Berkeley, we were given the advice by a lecturer there that there was no sound reason for having a faculty of education at the university. It was absurd, he said, to have a faculty of education because all faculties within the university were engaged in education. It was pretentious, he maintained, for a particular group of people to claim greater expertise in education than the general population because all us had much the same experiences in education and thus knew pretty much the same about education.

Imagine if this same line of reasoning were applied to physics. The argument might go like this: We all occupy physical space and live through a period of time. From this common experience, all of us know pretty much the same about time and space, thus there is no need for a faculty of physics. Or suppose that we apply the argument to disease. All of us experience illness from time to time, and from this experience we have a common knowledge of illness. Thus it is unnecessary to have a faculty of pathology in a university.

The point, of course, is that naive experience is an insufficient basis for the development of knowledge about any field of phenomena. The establishment and extension of a fund of knowledge requires systematic and well disciplined inquiry. This is as true for the development of knowledge about disease as it is for the development of knowledge about education. Disease and education are fields of phenomena worthy of investigation. Pathology and educology are the funds of knowledge which successful, well disciplined inquiry can develop about those fields.

In the process of developing and subsequently teaching and undertaking guided study of the fund of knowledge about education, controversy can arise at several points.

For example, some take the extreme skeptic's viewpoint and doubt that knowledge about education is possible. This is the implication of those old saws such as "teaching is an art, not a science," or "teachers are born, not made."

Others (such as our lecturer of 30 years ago) concede that knowledge about education is possible, but assert that it is not worthy of devoting resources to its investigation because the findings would not exceed what is already known from common experience and common sense.

Yet others embrace the assertion that knowledge is possible about education, but they differ over what the proper name of that fund of knowledge should be. Names which are advocated include *Education* (always spelled with a capital "E" to distinguish it from the educational process), *Educational Studies*, the *Study of Education*, *Professional Education*, *Teacher Education* (spelled in capitals to distinguish it from the general process of teacher education), *pedagogy*, *psychopedagogy*, *andragogy*, *ethology* and, of course, *educology*.

Related to the controversy about a proper name for knowledge about education is the relationship among discipline, fund and field. It is possible to make a viable distinction among these three. It is proper to call a set of rules and logical operations for conducting inquiry the *discipline* for that inquiry. (We have argued elsewhere that at least three sets of rules can be distinguished — analytic, normative and empirical.) It is also proper to call a body of warranted assertions a *fund* of knowledge. And it is proper to call a set of phenomena which can be investigated systematically a *field* of phenomena.

Although these three distinctions are possible and proper, they are sometimes ignored, and being ignored, they are sometimes conflated.

For example, some talk and write of the *study of education*. The term functions ambiguously. It sometimes means the fund of knowledge about education, it sometimes means the process of inquiring about the educational process in order to produce knowledge it, and it sometimes means the guided study of the educational process by a student in order to extend the student's knowing about it. A term which names so much loses its power to assist in the discernment of critical differences.

A second example is the use of the term, *discipline of education*. Some talk and write of the *discipline of education*, as for example in the questions, "Is education a discipline in the same sense that psychology is a discipline?" or "Can education as a discipline stand on its own or must it borrow from its parent disciplines of psychology, history and sociology?" Here, the term *discipline* is being made to function ambiguously, and it has much the same meaning as the term *study* in the expression *study of education*. That is, *discipline* is being used in the sense of *fund of knowledge*, *field of phenomena* and *discipline for inquiry* simultaneously.

Such ambiguous usage impedes progress in achieving warranted conclusions about education. It wastes time and energy, for example, by posing bogus questions such as, "Is education a discipline?"

If one consistently distinguishes among *field*, *fund* and *discipline* and if one distinguishes consistently between *education* as a process and *educology* as the fund of knowledge about that process, one would never be tempted to pose such absurd questions. It would be clear that *education* names the field of phenomena constituted by the educational process and that *educology* names the fund of knowledge about the process. Given the distinction between *education* and *educology*, to ask the question, "Is education a discipline?" is like asking, "Is osmosis a discipline?"

Would it be more sensical to ask, "Is educology a discipline?" No. To ask the question, "Is educology a discipline?" is the same as asking the question, "Is the fund of knowledge about the educational process the same as the set of rules and logical operations required to produce that fund of knowledge?" This would be much like asking whether the rules of tennis are the same as the scores from the tennis games recently played in the Australian Open. Play according to the rules produces the tennis scores, but clearly the rules are not the same as the tennis scores. Likewise educological inquiry conducted according to the rules of evidence and sound inference, if successful, produces educology (knowledge about education). But clearly the rules for inquiry (the discipline) are not the same as the knowledge (the warranted assertions) produced by the inquiry. Educological inquiry is related to, but is not the same as the educology which the disciplined inquiry produces.

Progress in extending the fund of knowledge about education requires recognition and use of the three critical distinctions of *field of phenomena, fund of knowledge* and *discipline for inquiry*. Neglect of these distinctions corrupts educological inquiry at the very beginning of the inquiry, and the product of the inquiry will most probably be a hopeless tangle of category mistakes and conflations. This is why it is of utmost importance to incorporate these distinctions into books and courses about methods of conducting research about education. It is in the research methods courses where the foundations of understanding (and misunderstanding) educological inquiry are established. It is the professional responsibility of all educologists to assure that the critical elements for a sound understanding are included in the curriculum materials of the research methods courses. Three of those elements are the distinctions among *field of phenomena, fund of knowledge* and *discipline for inquiry*.

Editors

International Journal of Educology, 1990, Vol 4, No 1

An Educology of Instructor Goals, Strategies and Stages of Group Development

Mary Ellen Beadle, Walsh College,
Canton, Ohio, USA, and **Fred C. Feitler**, Kent
State University, Kent, Ohio, USA

ABSTRACT

A questionnaire was administered to 34 college instructors and their students in seven liberal arts colleges (four-year tertiary institutions offering the bachelor of liberal arts degree) in northeastern Ohio to ascertain the connections which they conceived among their instructional goals, their instructional strategies and the stages of group development which the students experienced in their classrooms. The college instructors showed little awareness or appreciation of the use which could be made of the stages of group development in the achievement of intended learning outcomes.

Introduction

Three important questions in relation to instructor goals, strategies and stages of group development are: (1) How do college teachers utilise group process in their classrooms? (2) Do instructional systems accurately portray the actual behaviour of these teachers? (3) Do classrooms in higher education experience the stages of group development described in the literature?

Classic instructional systems theory encompasses considerations of content, process and purpose. Much instructional design literature looks at purpose and content, but ignores process, while emphasising instructional strategies. Where process has been examined (Gagné and Briggs, 1979; Romiszowski, 1981), issues such as group size have been considered, in contrast to viewing the teaching and learning setting as a group phenomenon.

By viewing the class, teacher and students as a group, the interactions can be examined as group process dynamics and as potential components of instructional design. The relevant research literature provides further clarification of this position.

Application of methods based on group process is found in the research literature (Schmuck and Schmuck, 1979; Stanford, 1977). However, no integration of methods of instruction based on group process exists in the research literature about instructional design. Briggs (1982a) stated that most systems models pay more attention to instructional material than to group process. The interest of the research about instructional

design in materials and media and an effort to change the teacher from information giver to information manager have resulted in instructional design research failing to analyse the role of the teacher and group process Instructional design research has failed to learn from other teaching and curriculum models For example Sergiovanni and Staratt (1971) described an instructional design model consistent with process and product concerns Tubbs (1978) presented a model of a systems approach to small group interactions, a type of small group instructional design Glaser (1982) anticipated the development of a macro theory of teaching and instruction that includes patterns of teacher student interactions

In light of this gap in the research of instructional design, we (Beadle and Feitler) have investigated one group process variable, *viz* the stages of group development Specifically we examined the relationship between the importance of instructional goals (objectives) and instructor use of instructional strategies based on the five stages of group development (Tuckman and Jensen, 1977) These stages are orientation norm development, conflict, productivity and termination

Theoretical Perspectives

Instructional design theory properly has three major concerns (1) methods of instruction based on objectives (purpose), (2) subject matter (content), and (3) process (interactions of teacher and students) Methods of instruction based on objectives and subject matter have properly been incorporated into instructional design theory For example, Gagné and Briggs' (1979) description and explanation of the events of instruction have suggested a sequence of instructional strategies related to cognitive processing However, methods of instruction based on process have not been an integral part of instructional design theory One promising avenue of inquiry which looks at the interactions of teacher and students is group process research Since most education takes place in group settings group impact and the influence of members can be a powerful force in supporting the learning process (Bradford cited in Schmuck, 1977) Briggs (1982a,b) has noted that instructional design research has prescribed few methods of instruction based on group process

The research literature about instructional design specifically and about the educational field generally, recognises the importance of including group process concerns in the design of instruction (Briggs, 1982a,b, Hare, 1976, Hough and Duncan, 1970, Schmuck and Schmuck, 1979) Others have made concrete suggestions as to how this can be accomplished by the teacher (Schmuck and Schmuck, 1979, Stanford, 1977)

Koehler (1978) proposed that research should attempt to describe and explain relationships between teaching processes and learning outcomes Bobbitt Nolen (1987) looked at possible relationships between goals and learning strategies and elucidated a relationship between one type of learning strategy and what can be described as a subject matter mastery goal

Gropper s (1983) model of instruction quantified the conditions of learning to make reaching an objective easy Andrews and Goodson (1980) presented 14 common tasks of instructional design One task is the formulation of instructional strategies to match subject matter and learner requirements. Learner requirements may be related to the individual learner and also might be related to groups of learners. Menges and McGaphie (1974) contributed to theory building by providing a taxonomy for interpersonal learning outcomes. Gagné and Briggs (1979), Dick and Carey (1978) and Romiszowski (1981) based instructional decisions on group size. For example, Romiszowski suggested that objectives, content, study habits and the skill and knowledge of learners influence the size of the group. Romiszowski (1981) believes that the critical question for instructional designers is not whether to use group methods but rather when to use them. He further has stated that group environment opportunities provide for an increase in learning activities. Learning activities may be initiated by the teacher or student, and they include experiences of the learners and teacher or restatements of what students learned during the lesson. Romiszowski not only used group size to suggest methods of teaching but also discussed the importance of considering interaction patterns in making decisions about group methods. There is compelling evidence that instructional design should provide a choice of instructional methods (Reigeluth and Merrill, 1979; Dick & Carey, 1978) to meet specific goals and content.

Stiltner (1973) studied the effect of teacher interventions in a junior high school class. Teacher interventions were based on the five stages of group development. The results of her study indicated that the junior high school class does not become a productive work group unless these interventions are made.

Some researchers have suggested that, in the interests of further development of instructional design theory, there would be much merit in conducting studies which investigate relationships between goals and strategies, and in particular, the use of instructional strategies based on groups. One group variable which may have particular importance is stages of group development. Schmuck and Schmuck (1979) and Stanford (1977) have suggested that analysis of stages of group development might be used as a basis for suggesting instructional strategies. Others (Romiszowski, 1981; Gagné and Briggs, 1979; Dick and Carey, 1978) have used primarily group size as the basis for suggesting instructional strategies related to group process.

Stages of group development are constituted by task and social concerns of the group. At least five stages can be distinguished: orientation, norm development, conflict, productivity and termination. In the orientation stage, the group is concerned with information seeking, getting acquainted, and establishing trust. During norm establishment, the members of a class organise into an effective learning team; their activities include development of responsibility, responding to others and confronting problems. During conflict, the group tests norms which it has established. No matter what the teacher does, the students think the teacher is wrong. During productivity, the classroom group becomes a working unit; it works together to accomplish tasks. Members have learned to deal with conflict and disagreement in constructive ways. In the termination stage, individuals begin to withdraw physically and emotionally. There is a break down of group skills, and lethargy develops. Stanford suggested that strategies teachers use in the classroom have an effect on how successfully a classroom passes through the stages of group development and how effectively students learn content.

Method and Sample

To identify relationships between goals and strategies, we (Beadle and Feitler) developed two questionnaires (one for teachers, one for students) and conducted a pilot study to produce the final form. Both questionnaires included ten statements about instructional goals and 24 statements about instructional strategies. The ten instructional goal statements were based on the IDEA System (Cashin and Perrin, 1978). The 24 instructional strategy statements were based on the work of Stanford (1977) and Cashin and Perrin (1978). Questionnaires were distributed to 64 college instructors and to one of the classes of each of the instructors (64 classes) in seven liberal arts colleges (four year post-secondary institutions offering the bachelor of arts degree) in northeastern Ohio. Of the 64 sets of questionnaires distributed to instructors and their students, 54 sets were returned (1016 total surveys). The data analyses included Pearson Correlations between goal and strategy statements, Cronbach's Alpha test for reliability on the goal and strategy statements, *t* tests and chi squares and cross tabulations on the instructors' group vs. non-group orientation and use of strategies.

Cronbach's Alpha was calculated for goal and strategy statements for both students and instructors. Reliability scores indicated a high reliability for the strategy statements (r = 0.93), a moderately high reliability (r = 0.63) for the goal statements.

The goal statements were taken directly from the IDEA System. Reliability scores have not been calculated on these statements. Changes in the statements have been made in the statements based on instructor experience and suggestions for additional objectives (Hoyt and Cashin, 1977). The reliability scores indicate the goal statements need further refinement. Therefore, the goal statements did not adequately describe the possible instructional goals of college instructors.

INSTRUCTIONAL GOALS STATEMENTS

Subject Matter Mastery

gaining factual knowledge
learning fundamental principles, generalisations or theories
developing skills, competencies and points of view needed by professionals in the field
learning how professionals in the field gain new knowledge

Development of General Skills

learning to apply course material to improve rational thinking
developing creative capacities
developing skill in expressing one's self orally and in writing

Personal Development

developing a sense of personal responsibility
gaining a broader understanding of intellectual cultural activity
discovering implications of the course material for understanding myself

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INSTRUCTIONAL STRATEGIES STATEMENTS

Orientation

explain what students can expect will happen in class
provide opportunity in the classroom for students to get acquainted with me
provide opportunity in the classroom for students to get acquainted with each other
model the behaviour expected
provide opportunity during class time for students to ask questions

Norm Development

use group centred activities rather than teacher centred activities for example presentations by groups of students to the class
involve students in setting goals
arrange seating so students can see and hear each other
have students role play in class to rehearse skills they have been taught
structure learning experiences where students must work together
encourage students to cooperate by suggesting ways they can work together
structure assignments so students have an opportunity to make group decisions

Conflict

observe the class and describe problem behaviour to help identify problems that may inhibit the class from working together
describe specific ways, including examples, students can improve their work or ability to work together
accept student criticism as part of behaviour students demonstrate as

way to solve problems
respond to feelings underlying students words

Productivity

help the students become reacquainted after periods of vacation or interruptions
help the students work on learning tasks and on socio emotional concerns by providing learning activities that personal concerns with content
encourage students to get involved in projects outside the classroom
use short term discussion groups

Termination

at the end of the semester, encourage students to express feelings about the end of the class
review at the end of the semester to help students analyse and understand the impact the class has had on them
tie up loose ends and provide students the opportunity to clear up unfinished business at the end of the semester
discuss with students ways in which they can use the skills and knowledge acquired in this class in future classes

The strategy statements were developed specifically for this study, and they were based on the work of Stanford (1977) and Schmuck and Schmuck (1979) A pilot study was use to refine further the choice of strategies for the main study Results indicated that that they are consistent with the research literature from which these strategies were chosen

Results and Discussion

Group Process Strategies Not Used for Subject Matter Mastery

Our main purpose was to determine if a relationship existed between instructional goals and instructional strategies based on the five stages of group development Goals which were described as focusing personal development and general skills development showed a correlation with 17 of the strategies based on the five stages of group development The strategies were those related to norm development and they dealt primarily with student feelings and social concerns

The positive correlations indicated that goals and strategies varied in the same direction Instructors who rated the goal to be important also rated the strategy as being used frequently If the goal was rated as unimportant, the strategy was rated as not being frequently used Instructors rated goals of subject matter mastery to be of highest importance, but did not indicate frequent use of instructional strategies based on the five stages of group development to achieve subject matter mastery goals

The lack of relationships between subject matter mastery goals and strategies may be due to the goal statements used. The goal statements were not behaviourally stated, and they were general enough to allow personal interpretation of meaning.

An absence of relationship between subject matter mastery goals and strategies may also be explained by college instructors not using group process strategies to achieve subject matter mastery goals. College instructors indicated that subject matter mastery goals are most important. Through past teaching experience or lack of knowledge about group process strategies, college instructors use other teaching strategies, such as lecture, to achieve subject matter mastery goals.

Results for the Four Subject Matter Mastery Goals

"To develop specific skills" was the only subject matter mastery goal to show a positive significant correlation with "students role play in the classroom to rehearse skills that have been taught." This relationship may be a result of the wording of the goal and strategy statements. The word *skill* appeared in both, and it was the only use of the word in a strategy or a goal statement. This association between goal and strategy may be a function of language rather than intention of the instructor to achieve a specific goal by use of a strategy.

Since college instructors rank subject matter mastery goals as most important for student achievement, role playing may be seen by them as a way to practise knowledge and skills learned in the class. Role playing is used by college instructors to teach content rather than to teach the process of role playing.

"To learn fundamental principles, generalisations or theories" was ranked as the most important goal by faculty, but the goal did not correlate with any strategies. College instructors are not using strategies related to group development to achieve their most important goal. Tradition suggests that lecture is used by most college instructors. The lecture method may be the only strategy with which they are familiar. Reviews of teaching methods (Gall and Gall, 1976, McLeish, 1976) indicate choice of method is determined by the objective and that a variety of teaching methods may be appropriate. College instructors receive little training in teaching and as teaching graduate assistants, they imitate teaching strategies. College instructors may not be aware of other possibilities. Creativity in the classroom is usually not rewarded and using lecture takes less time than using group related strategies. Giving information in the role of teacher seems safer, the instructor thinks the goal is more likely to be achieved rather than relying on the energy and strength of the group. College instructors apparently see student cognitive development as separate from student personal development. College instructors also feel threatened in using these strategies because this type of instruction reveals the self and because instructors lose some control over the classroom.

"To learn how professionals in the field go about the process of gaining new knowledge" was rated lowest in importance by faculty, and the goal was not related to any strategy. College instructors do not set as a high priority on connecting classroom learning with student professional development. This viewpoint supports the traditional role of liberal arts education, learning for the sake of learning. The traditional viewpoint also ignores important reasons why students are in college, *viz* enhancement of career opportunities. College instructors do not believe this reason for learning is important despite increasing numbers of non-traditional students (adult learners, not the 18-22 year olds who went directly to college from high school), students who bring much experience and expetise into the classroom. The role of teacher remains as information giver. This result may also be due to the sample for this study, students were traditional. College instructors in the institutions volunteering for this study may not have much experience in teaching non-traditional students.

"To gain factual knowledge" was the only goal to show a negative correlation with a strategy "I help students become reacquainted and adjusted to the classroom environment after periods of vacation or interruption." College instructors indicate an inverse relationship between achieving this subject matter mastery goal and student personal concerns. The literature suggests (Runkel, *et al.*, 1971; Stiltner, 1973; Gorman, 1974) process needs to be dealt with before effective content communication can take place. College instructors are either not aware of the relationship between effective content learning and process or do not accept the opinion of experts.

Summary

Instructors who use strategies based on the five stages of group development use them to achieve goals related to personal development rather than subject matter mastery. The literature suggests that group development strategies can be used to achieve task concerns (Schmuck and Schmuck, 1979) and that students who participate in group experiences are better at critical thinking (Beach, 1970). Results from this study indicated that instructors who are using strategies based on the stages of group development are not using the strategies to achieve task concerns, but rather social concerns. Instructors seem to view the strategies based on the stages of group development to be related to personal or emotional concerns of students and not cognitive development of the student. As the literature suggested, the choice of one's method seems to depend on one's goals (McKeachie, 1963; Gall and Gall, 1976; McLeish, 1976). The results of our study may be due to a misunderstanding about the use of group development strategies, the misconception that group development deals with feelings rather than both feelings and content or a lack of training among college instructors in various teaching methods and strategies.

Stiltner's study suggested that teachers need to make interventions in the classroom to help the class develop through the stages of group development and deal with issues of conflict. Instructors in this study emphasised subject matter mastery but did not claim to use group oriented teaching strategies to help the students develop through the stages. As Stiltner suggested, learning content is less effective when the instructor does not help the class deal with group process issues.

Our study did not assess student achievement, and it was not looking for a relationship between the use of strategies based on the stages of group development and student achievement In contrast, our study was interested in focusing on description of the use which faculty in colleges is currently making of particular instructional strategy in relation to instructional goals.

The results of our study show an absence of internal consistency instructional goal statements This limits the use of these statements for other studies, and it influences the interpretation of results of our study As the follow up interviews for the pilot study indicate, there is some confusion by respondents in understanding the language used Further research needs to be done to develop goal statements with higher reliability

Group vs Non Group Oriented Instructors

Group oriented instructors do use two strategies which deal with student personal concerns or feelings However they are not using group strategies to achieve subject matter mastery Although they identified themselves as group oriented, based on their uses of strategies, they did not seem aware that strategies based on the stages of group development could be used to teach content They identified a group oriented instructor as one who is concerned with personal feelings of the student Most group oriented instructors in the survey considered themselves to be interested in student personal concerns Also, only two strategies were used more frequently by group oriented instructors One would expect more use of the strategies because they identified themselves as group oriented

College instructors do not understand the use of strategies related to group development This may be due to lack of training or a misunderstanding about group teaching strategies Group strategies based on the stages of group development can be used if the class is divided into small work groups, but the strategies can also be used if the class as a whole is thought of as a work group The term *group* does not have to imply individual work groups, it can imply activities of the class as a whole Perhaps the influence of the American popular press and the American emphasis on groups for consciousness raising and encounter has made instructors unaware of the role work groups can play in the classroom Groups have been portrayed as divisions of a larger group and the large group has not been portrayed as a group in itself

As the relevant literature has suggested (Schmuck and Schmuck 1979 Stanford, 1977), teachers use strategies related to orientation and norm development Teachers are less likely to use strategies which deal with conflict Therefore the classroom group does not become as productive as it might The results of our study support this assertion Both group and non-group oriented instructors used orientation and norm development strategies, but they were less likely to use strategies related to conflict

No differences were found between group and non group oriented instructors in their use of instructional strategies based on the stages of group development This absence of difference may be due to several factors The question used to categorise faculty in one group or the other was not useful in accepting or rejecting this hypothesis The questionnaire asked instructors to identify a variety of methods they use in the classroom. The questionnaire also should have asked the instructors why they use group methods. Instructors see themselves as group oriented if they are concerned with personal needs of students. The stages of group development indicate that group oriented instruction is more than having concern for the personal needs of students. Group oriented instruction also is concerned with the process of learning in the classroom.

Although group oriented instructors used strategies related to student feelings and personal concerns, they did not rate goals which are related to personal needs of the student any differently than non-group oriented instructors. Instructors did not report an association between strategies related to student feeling and goals related to student feelings. The wording of the goal statements in the questionnaire may not have been as clear as they should have been. More likely, the method used to categorise instructors into group oriented or non-group oriented did not sufficiently distinguish one group from the other. Therefore, acceptance or rejection of this hypothesis does not contribute to understanding the differences between group and non-group oriented instructors and their use of strategies.

These results may indicate that group oriented instructors are more aware of the personal needs of students, and they would like to think that they are teaching with those needs in mind. But strategies which would achieve this are not being used in the classroom. Instructors seem to be saying one thing and doing another. Also, instructors may not have interpreted the strategies listed on the questionnaire as useful. Other strategies related to group orientation may be used.

Conclusions

Results of this study provide a rationale for development of a taxonomy for events of instruction which relate goals and strategies. Events of instruction have been proposed by Gagné and Briggs (1979) based on cognitive processing theory. These events of instruction are based on the internal thoughts of students. Events of instruction can also reflect group process theory by suggesting instructional strategies based on stages of group development. Both ideas base events of instruction on (1) sequencing of concepts and (2) achieving mastery at one level to succeed at the next. The difference is one of emphasis: internal (individual) or external (group) processes. Both types of processes exist in the classroom, and both should be explicitly planned. Differences in the use of strategies seem to be more significantly related to the importance one places on goals than to subject matter. The relevant literature supports this result (Beach, 1970; Gall and Gall, 1977; McKachie, 1963; McLeish, 1976; Henson, 1980; Koehler, 1978).

Instructors who identified themselves as group oriented were expected to use strategies based on the stages of group development more frequently than instructors who identified themselves as non-group oriented. This expectation was not supported by the data. No significant difference in the use of strategies by group and non-group oriented instructors was found. Instructors in the sample were not using these strategies as often as might be expected, and they were not using these strategies to teach subject matter mastery goals The absence of these instructional strategies was a consistent finding in throughout our study Instructors are not aware or are not convinced that strategies based on the stages of group development can be used to achieve subject matter mastery

Doyle (1979) stated that teachers and students affect each other Bradford (cited in Schmuck, 1979) stated that groups are in the heart of the learning process Gagné and Briggs (1979) suggested that most learning takes place with learners assembled in groups Results of our study indicate that college instructors are not fully using the potential of the group to achieve subject matter mastery Effective group instruction clearly is related to more than class size or having students feel good about themselves Group instruction has to do with using the available resources in the classroom to reach the full potential of both teacher and students Use of strategies based on the stages of group development is one way to begin to achieve this Classroom learning and teaching experiences are unfortunately and unnecessarily limited by an absence of knowledge or a lack of appreciation on the part of college instructors of the value and efficacy of teaching strategies derived from group development

Across the USA and in other countries (developing and developed) it is common practice in teacher education programs for intending primary and secondary teachers to emphasise the relationship between goals and strategies in planning, implementing and evaluating instruction Unfortunately, there are few if any teacher education programs extant let alone required, for those intending to teach at the tertiary level (i e post-secondary or college and university level) One of the undesirable consequences is that tertiary teachers are not as adept as they might be in using the full potential of the teaching and learning situation to promote the achievement of intended learning outcomes One of the areas in which they show an exceptional weakness is in the use of group processes as part of their repertoire of effective teaching strategies In short it is important for intending teachers to study the educology of instruction (knowledge about strategies for effective teaching) regardless of whether they intend to teach pre-primary, primary secondary or tertiary students

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An Educology of Curriculum: Towards a Connectionist Curriculum for Critical Democracy

Jesse Goodman
Indiana University, Bloomington, Indiana, USA

ABSTRACT

Critical democracy within the USA and other countries with similar values and societal arrangements can be developed and promoted by several means One of those means is through the primary (or elementary) school curriculum The formulation and implementation of curriculum for critical democracy requires an understanding of the essential or distinguishing characteristics of democracy The writings of John Dewey and other social critics provide assistance in delineating what the concept of democracy implies A marking out of that which counts and which does not count as critical democracy provides a rational basis for resolving the dialectical tension created by two competing visions for primary (or elementary) school curriculum the vision implied by traditional (or conventional) offerings vs that offered by those who advocate radical curricular reforms for schools This dialectical tension can be resolved by adopting a third vision that of the connectionist perspective Some of what this perspective implies for primary (or elementary) school curriculum is exemplified by the actual practices of an existing independent primary school and the pioneering ways of that school present some sound guidelines for other educators who have a deep and abiding interest in curriculum for critical democracy

Introduction

There is a way in which the curriculum of primary (or elementary) schools can serve as an effective vehicle for promoting critical democracy The way derives theoretically from the thinking of John Dewey and other critics of schooling and society However it is not merely one of those propositions which is good in theory, but never works in practice It experientially has been manifested in at least one primary school, Harmony, an independent school which is actively searching for ways to establish a democratically focused education While it is one thing to advocate for a particular theoretical viewpoint it is another thing to create an educational program for critical democracy within a given school and society As Simon (1988 3) has stated "The move from visionary rhetoric to classroom reality, from curriculum critique to pedagogical [i e educological] possibility is rarely straightforward" But we know that to forsake such a journey is to postpone indefinitely a serious exploration of "what must be done." In fostering a vision of primary (elementary) curriculum for critical democracy, it is important that we not overlook those who are currently involved in such actions. As Wexler (1987:228-229) and his colleagues have written,

> The presence of these social movements belies that a critical pedagogy [i.e. educology] could be theorized [sic] in the academy and successfully handed down to the classroom, with more than token effect.

While we[1] have investigated investigated several different aspects of Harmony School (e.g. organisational power structure, institutional rituals), our focus here is on those curricular characteristics found within this school which help us to identify practices which promote critical democracy within the USA and perhaps other societies with similar social, political and cultural structures and values. We take the term *curriculum* here to mean the content, form and learning experiences found within primary (i.e. elementary) schools -- years 1-6 of school or ages 6-11.

Critical Democracy

The concept of critical democracy derives primarily from John Dewey's 1927 publication, *The Public and its Problems* (1954). For most Americans, *democracy* is an often used, but infrequently defined term. It is commonly conceived as having something to do with choosing representatives by voting, having faith in the will of the majority, providing certain checks and balances and protecting the right to express minority viewpoints. Most citizens equate democracy with "freedom" as reflected by the way public and private institutions currently operate. It is generally believed that only minor modifications, such as voting rights acts or judicial rulings which declare racial segregation unlawful, need to be made in order to preserve democratic virtues. Perhaps the most noticeable part of American democracy is that it calls for relatively little effort on the part of the average citizen (e.g. merely voting at election times, and even then there is no compulsion to cast a vote - typically less than half of those eligible to vote do so).

Dewey (1954) challenged the viability of this seldom questioned concept of democracy. He made a distinciton between democracy as an ideal and democracy as a form of government. Dewey noted that in American society democracy is associated with strictly *political* institutions and realms of thought, and he questioned whether this political democracy is capable of serving the public interest. In particular, he drew attention to the relationship between politics and economics:

> [Liberal] democracy emancipated the [upper] classes whose special interests they represented, rather than human beings impartially ... The notion that men are equally free to act if only the same legal arrangements apply equally to all irrespective of differences in education, in command of capital, and the control of the social environment which is furnished by the institution of property is a pure absurdity. [Quoted in Manicas, 1985:141]

He went on to illustrate the way in which economic powers within society effectively narrow Americans' notion of democracy thus protecting the interests of a few privileged citizens by shielding their interests from public scrutiny

> the modern economic regime control present policies ... [to assure that] the main business of government is to make property interests secure. ... The same forces which have brought about the forms of democratic government, general suffrage, executives [i.e. government ministers] and legislators chosen by majority vote, have also brought about conditions which halt the social and humane ideals that demand the utilization [sic] of government as the genuine instrumentality of an inclusive and fraternally associated public. ... The democratic public is still largely inchoate and unorganized [sic]. [Dewey, 1954:108-109]

For most Americans, democracy has become viewed as an artifact (e.g. governmental agencies) or a set of cultural rituals (e.g. passively observing elections or occasionally casting votes), rather than a dynamic process in which the public, at large, actively participates on a daily basis and which involves face-to-face contact.

Dewey's critique of liberal democracy has been echoed and enriched by several analysts during the last two decades. For example, Braverman (1974) and others (Burawoy, 1979; Edwards, 1979; Gordon, Edwards and Reich, 1982; Wood, 1982) illustrate the way in which American workers have increasingly lost their "voice" in determining the substance of their labour. Both racism and sexism have contributed significantly to a narrowing of democracy in our society. Barrett (1979) examines the way women have been concentrated into particular kinds of work (e.g. clerical work, nursing, domestic service, education) rather than others (e.g. medicine, law, politics, business, building trades). Occupations designated as "women's work" earn lower wages, have less desirable working conditions, offer less occupational autonomy and attract less status than occupations identified as "men's work." As a result, those who do "women's work" are relatively powerless in American's current political democracy. Similarly, it is widely acknowledged in America that in spite of gains made in civil rights, people of non-British and European racial origins are still largely disenfranchised from the political, economic and cultural power centres of American society (e.g. Hochschild, 1984; Oakes, 1985).

Given these critiques, there is nothing inherently complex about the concept of critical democracy.[2] It presents both a vision of an ideal (and hence a never fully realised goal) and a process by which this vision can be pursued. First, the term *critical democracy* refers to much more than political institutions:

> A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension ... of the number of individuals who participate in an interest so that each has to refer his [or her] own action to that of others, and to consider the action of others to give point and direction to his [or her] own, is eqivalent to the breaking down of those barriers of class, race, and national territory which kept men [and women] from perceiving the full import of their activity. [Dewey, 1966:87]

As a form of associative living, critical democracy implies a significant expansion of participation within the multiple realms of social life in which one takes part. Institutions, whether public or private, would be organised around values of giving its members a "voice" in setting an implementing its goals (e g Barber, 1984, Pateman, 1970) Critical democracy also implies a moral commitment to promote the "public good" over any individual's right to accumulate privilege and power (Barber, 1984, Dahl, 1982, Gran, 1983) In this sense, it suggests strong values for economic and social justice which actively inhibit sexism, racism, classism, ethnocentrism and other forms of oppression

As Ventriss (1985) notes, critical democracy implies that citizens will struggle with issues regarding democratic theory, civic virtue and responsibility, social equity, group conflict and cooperation, community structure, institutional organisation, individual rights, the public interest and distribution of power Critical democracy can never be simply a set of institutional changes, however far reaching As Dewey (1954) notes, democratic living also involves the corresponding transformation of human consciousness At the core of these concerns is the dialectical tension between the values of individuality and those of community

Individuality and Community

In order to sustain critical democracy in society, the balance between the values of indivudality and community must be maintained On the one hand, individuals must be actively supported in their efforts to "self actualise" Within critical democracy there is an appreciation for individual diversity and self expression Having occasions for individuals to pursue their inner callings, to achieve beyond typical expectations and to receive recognition for those achievements are signs of a dynamic participatory society

This value of individuality, however, must be equally balanced by an ethos of community As Barber (1984 100) has stated

> [individual] freedom is a social construct based on a fragile form of human mutualism that grants space to individuals who otherwise would have none at all
> [T]he [individual] will unimpeded by external obstacles is not free in any recognizable [sic] human sense until it is informed by purpose, meaning, context, and history .... Self direction brings freedom only when the self is emancipated from mere impulse and appetite, when it associated with intention and purposes that by their nature can only arise within the guiding limits of a society and a culture.

Each individual's "actualisation" can only be fully realised in a just and humane society which is committed to redressing gender, racial class and ethnic oppression Individualistic goals must be balanced by values of compassion and civic responsibility and societal structures which support them

Significant imbalance in the dialectical tension between individuality and community in societies distorts democracy As Lesko (1988 10) has noted,

> Individuals need to be concerned with the public realm (community), and a just society needs strong, autonomous individuals to keep it responsive, self critical and dynamic.

For example, if tilted in the direction of individuality an ideology of individualism emerges Autonomous individuals are seen as existing prior to and separate from social arrangements, and individuals are thus seen as more important than societal associations. Individualism legitimates a view of society as little more than a stage upon which individuals "act" to obtain their desires. The public sphere is, for the most part, an abstraction; only the needs and aspirations of the individual are real. As a result, "society" can be justifiably manipulated by individuals for their benefit. If society tries to restrain the efforts of the individual, it is perceived as oppressive.

Similarly, if the value of community dominates in a given society, it is transformed into an ideology of social conformism. This ideology suggests that the needs of society as a whole are so important that autonomous individuals are a potential threat by their mere existence. In order to promote a sense of common purpose, there is a uniform understanding of how people should look, act and think. Deviance from the norm is seen as "unnatural" or treasonous. Passive obedience to authority is elevated to the level of moral obligation. Social conformism justifies prohibitions against examining ideas openly and critically on the grounds that some ideas will destroy the social fabric (often presented in nationalistic or religious terms) which holds society together. As a result, the "social order" must be zealously defended against deviant views and actions.

Striving for balance between individuality and community is central to establishing critical democracy. The suggestion that education can be constructed to advance this democratic ideal in any society must be seen in light of the society's particular sociohistorical context.

The Rise of Individualism in the USA[3]

The dominance of individualism at the expense of community as a social value in the USA has been substantiated by a diverse body of research (e.g. Dewey, 1930; Elshtain, 1981; Huber, 1971; Lesko, 1988; Lukes, 1973; Sennett, 1977; Varenne, 1977; Wood, 1972). Bellah and his colleagues (1985) have argued that although values of civic responsibility are strongly felt in fragments of American populations, the vast majority of Americans lacks a meaningful "language" which clearly reflects a desire to work for the public good. President Reagan's 1980 campaign slogan, "Are you better off today than you were four years ago?" is illustrative of this individualistic orientation. Lasch (1978) has suggested that the American preoccupation with individual advancement has escalated dramatically, resulting in a "culture of narcissism."

Heritage

The liberty to control one's own life is perhaps the most passionately felt American value. Personal initiative to obtain privately motivated goals is a theme deeply rooted in America's heritage. Huber's (1971:10-11) study of "American success" has traced the origins of American individualism:

> The idea of success was a force which drove men on to build America. At the center [sic] was the individual. Self confident in his God given rights, he entered a free world of expanding opportunities.

Many immigrants who settled on this continent did so in the name of personal liberty and prosperity.

Early American authors such as Ben Franklin, Walt Whitman and

Ralph Waldo Emerson often acclaimed the development of "the self" over society

> The Union is only perfect when all the uniters are isolated .... Each man, if he attempts to join himself to others, is ... diminished ... The Union must be ideal in actual individualism. [Emerson, 1929 318]

The emphasis on individual liberty, separation from past traditions and social arrangements and personal freedom to "prosper" without restrictions rooted individualism deep into American soil

Corporate Economy

While individualism is tied to America's national heritage, several analysts suggest that its dominance crystallised during the growth of industrial capitalism in the early part of this century (Dewey, 1930) Corporate capitalism justified an ethos of unlimited personal gain with "the claim that private accumulation leads to public welfare" (Lukes, 1973 30) Industrialists such as Andrew Carnegie, John D Rockefeller and Henry Ford became America's heros proof that any individual could achieve greatness in a "system of individualism which guards, protects and encourages competion" (Clews, 1907 1)

This corporate ethos legitimated individual competion as an ethical basis for economic productivity The belief in vigorous competition gained support during this same time period from the theory of "Social Darwinism" As Hofstadter (1959) notes, this theory proposed that those individuals who "won" within a competitive social framework were examples of our species continuing evolution This emerging corporate structure drastically altered the nature of work by emphasising specialisation, the division of labour and the solidification of economic classes Prior to this development, it was widely understood that interdependence and economic interrelatedness were needed for the production of goods Individuals often became skilled at many different crafts However, under industrial advances and incorporation, specialisation was needed to maintain a competitive edge Work was segmented into different tasks, and workers were seen as fragmented abilities (e g , Braverman, 1974, Edwards, 1979, Gordon, Edwards and Reich, 1982) Contractual relations among individuals served as the model for the new industrial society These relationships minimised one's connection to the past and future Only an individual's capabilities at any one moment was deemed important Each person was viewed as essentially unrelated to a social group or society at large As Dewey (1930) notes, individualism encouraged the majority in American society to take this economic structure for granted

The adulation of competitiveness during America's early industrial growth has become muted and as Hofstadter (1959 202) suggests the middle class eventually

> shrank from the principle [Social Darwinism] it had glorified, turned in flight from the ... image of rampant competitive brutality, and repudiated the once heroic entrepreneur as a despoiler of the nation's wealth and morals

However, in the present day era of yuppies, insider trading and flagrant unethical and in some cases illegal use of political influence for personal gain, it is easy to see why Hofstadter (1959:202) also noted that the "critics of Darwinian individualism" have been relatively ineffective in altering the public consciousness or material structure of society.

Patriarchy

Patriarchy has also played an important role in the promotion of individualism. As several analysts have noted, patriarchy promotes a set of masculine values (e.g. competioin, individual achievement, objectivity) while at the same time implicitly repudiating alleged feminine values of subjectivity, emphathy and bonding (e.g. Belenky, Clinchy, Goldberger and Tarule, 1986; Elshtain, 1986; Gilligan, 1982; Hartley, 1959; Spender, 1980). Smith's (1978) analysis of symbolic communication within society illuminates how patriarchy has excluded women form having equal access in creating intellectual and moral culture. Gilligan's (1982) research has argued that if the "voice" of women were included in America's understanding of ethical action and societal arrangments, then the values of community (e.g. altruism, caring, civic responsibility, compassion, human connection and safety from violence) would be significantly stronger in American society than currently are reflected. As Dietz (1985:34) has stated,

> Feminists [sic] historians have discovered that women develop distinctive organizational [sic] styles and generate reform movements, act collectively and in distinctively democratic ways, agitate for social change and challenge political corruption. ... [I]f we're to [improve society] ... we would do well to look to our history, our organizational [sic] styles, and our distinctive modes of political discourse.

Since Western civilisation has been dominated by a male consciousness for several thousand years (c.f. Elshtain, 1981; Janssen-Jurreit, 1980; Keller, 1985; Smith, 1978; Spender, 1980), it is not surprising that America's conception of societal relations reflects a masculine ethos which in turn legitimates and fosters the same set of social values as individualism.

Popular Culture

The final factor which has contributed to establishing individualism firmly as a societal creed is American popular culture. Huber (1971:11) documents the manner through which Christianity "worked in harness with economics toward the goal of individual success." Popular religion helped Americans resolve the dilemma of Christian values which call on people to have concern for the welfare of their neighbours versus capitalism's call for personal reward through active competition against one's fellow human beings. Popular religion assured people that their prosperity was a form of "God's work" because their wealth was being used to build a Christian society. Since the 1930's, religion has been used not merely to justify the accumulation of wealth, but also as a means to obtain riches. If one *truly believes*, one can expect to prosper. From this perespective, "... getting ahead in order to get right with God [is supplanted by] getting right with God in order to get ahead" (Huber, 1971:332). Jim and Tammy Bakker, Jimmy Swaggart, Jerry Falwell and other tele-evangelists have turned this utilitarian interpretation of religion into a "performing art

As industrial capitalism emerged, a secularised amorality or "radical subjectivity" (Sennett, 1977:22) replaced Christianity as philosophical guidance for many individuals' personal actions. Under this personality ethic, individual ambition no longer had to be morally justified. Dale Carnegie's (1936) *How to Win Friends and Influence People* became a prototype for an entire genre of popular literature which claimed to help individuals "get ahead." As illustrated in his book, learning effective communication and interpersonal relation skills are not seen as ways to increase communication and interpersonal harmony in themselves, but as a means to manipulate others to satisfy one's own desires. The proliferation of "pop psychology" manuals and courses now in vogue legitimate the belief that individual success is what life is all about.

American popular arts, entertainment and literature affirm the value of individual achievement. The preeminence of the individual who "wins out" over social groups and forces is a conventional plot of American print and visual media. Images of "superheros" fill the pages of young people's popular media. Contemporary folk heros (e.g. athletes, entertainment stars, politicians) are those who obtain individual distinction. Popular television shows such as "Lifestyles of the Rich and Famous" and "Dynasty" perpetrate the myth that American society's greatness lies in the fact that it provides opportunities for individuals to gain power and wealth.

The Ironies of Individualism

There are a number of ironies embedded in American individualism. While generating an image of individual autonomy and uniqueness, in so far as this ideology has reflected and helped maintain a corporate economy, it has encouraged a state of social conformism. As Dewey (1930) noted, this "corporateness" brings Americans into association with others, however, these associations lack any sense of genuine community. Americans work side by side, day by day, however, few feel any more than a superficial connection. Since only a few individuals can actually manifest their individuality (e.g. ideas, values, artistry) within this corporate structure, the vast majority are left huddled together in a passive conformity.

> Hency, the irony of the gospel of individualism ... One cannot imagine a bitterer comment ... than it [individualism] subordinates the only creative individuality ... that of mind ... to the maintenance of a regime which gives the few an opportunity for being shrewd in the management of monetary business. [Dewey, 1930:1]

As corporate capitalism has grown, it has absorbed many areas of social life to fit a relatively narrow pattern of market place relationships. Much in the lives of Americans is reflected in economic metaphors of working, buying, selling and ownership. While flaunting their ability to choose from an abundance of commercial goods, their desires are channelled into a relatively narrow range of how life could be lived as they come to identify themselves as primarily "consumers" (e.g. Adler, 1977; Ewen, 1976; Ward, Wackman and Wartella, 1977). As their personalities become aligned to the needs of their corporate economy, their "individuality" is, in part, reduced to choosing the brand of beer or cigarettes which "singles them out from the crowd." Dewey (1930) attacked the ideology of individualism for its mythical powers. While creating a powerful image of the solitary person making the most of life, societies supposedly based upon the ideal of individualism actually provide few opportunities for most people to manifest indiviuality. It is a significant paradox that individualism and social conformism coexist as parts of the same social order in corporate societies such as the USA.

A second irony embedded in America's individualism is found in the myth that it provides an opportunity for each person to become "self actualised." Sennett and Cobb (1972) argued that since success in American society is presented as the result of one's own doing rather than in the context of social class, race and gender (which results in an unequal distribution of power and privilege), the self esteem of working class people (and other economic and social categories – nonwhite, poor and female) is implicitly and insidiously undercut. Since "upward mobility" is presented in American culture as the rule rather than the exception, one's failure to succeed in this quest is tacitly attributed to one's personal shortcomings (not to class, race or gender inequities). One's "self actualisation" is indubitably easier for those in American society who are already privileged rather than for those who are born nonwhite, working class, homosexual, handicapped or female. However, individualism obscures the reality of social privilege and power from the American consciousness, thus making it more difficult for Americans to understand themselves and to grow.

A final irony found in individualism is that while it promotes the view that Americans can determine their destiny, its emphasis on individualistic solutions to societal problems restrains them from doing so. Many people feel dehumanised and alienated in their encounters with social institutions, e.g. schools, work places, shopping centres, government. In response, they withdraw from public spheres and devote their energies to highly personal projects. As they grow to distrust and recoil from the public arenas of life, they become increasingly isolated and begin to believe that "what is" cannot be transformed (e.g. Lasch, 1978; Sennett, 1976). While many of them intuitively know that "something is missing," individualistic strategies hinder them from working collectively to build an alternative social order and take control of their mutual destiny.

Summary

This abridged account suggests that America's heritage, economic structure, system of patriarchy and mass culture all contribute to the growth and entrenchement of individualism as a national ideology. While this ideology is offered as a source of personal liberation, in many ways it thwarts most individuals from genuine self knowledge and power over their lives. By fostering the perception that there is an essential opposition between one's personal advancement and a commitment to the public good, individualism erodes the possibilities of genuine democracy.

While individualism ranks high in the values of American society, it is not an all pervasive ideology. As Varenne (1977) has argued, just as individual autonomy has its roots in the American tradition, so does a sense of neighbourliness, civic concern and a desire to belong to one's social group. Although the social value of community is not as strongly felt in American society as other values, its presence is recognisable. In addition, there have been periods in American history when people have strongly advocated for establishing a greater community ethos throughout their society. The union mevement during the 1930's, the civil rights activities which began in the 1950's, the 1960's peace movement and most recently the women's movement are just a few examples of efforts to reduce the power of individualism in American society. It is important to avoid viewing society as monolithic. At any given time, there are people who work consciously to build a more balanced society.

Individualism and Primary Curriculum

Schools are undoubtedly an important institution in industrialised societies. They teach children about society through subjects such as social studies, natural science and literature. In addition, the form and structure of schools teach children about societal values and arrangments, and individualism is reflected and nourished in most (if not all) primary schools. Almost without exception, primary schools assume that learning is an individual experience. "Individualising instruction" is a popular educational process. Students spend the majority of their school day working at solitary desks in single rows, answering questions and problems in separate workbooks or worksheets, individually taking tests and asking questions related to their individual concerns (Goodlad, 1984, Sarason, 1982). Individualised instruction can be properly regarded as having little to do with developing the individuality of students (e.g. responding to each child's unique learning style, recognising and giving "voice" to the personal knowledge which each student brings to school and consciously promoting each child's originality, creativity, thoughtfulness and efficacy). Rather, as practised, individualised education is an instructional design which separates each child's learning from those of classmates and focuses on the child's particular achievement on standardised curriculum content (Carlson, 1982).

This isolated learning supports a competitive learning environment. Few activities necessitate collaborative learning in most primary classrooms. The contributions or ideas of one's classmates are not seen as important to one's own education. Rarely do students develop the feeling that they are studying or exploring subject matter "together," as a class or group. Due to ability grouping in such subjects as mathematics and reading, which dominate the primary curriculum, each child is acutely aware of the child's individual "standing" in the class (Oakes, 1985). Consequently, students learn to work in an adversarial atmosphere. They are taught that in school their own achievement is all that is important.

Individualism is also reflected in the form and content of the primary curriculum found in most schools. Subjects such as history typically present a view of life as something in which only a few individuals (white, powerful men) actually participate (Anyon, 1979). In most primary schools, knowledge is arranged into unconnected "skills" which are taught outside of an intellectual context. Reading, writing, mathematics are emphasised over substantive content, reflective thinking or artistic talent (Goodlad, 1984). Primary education takes on a narrow, utilitarian orientation. These skill "subjects" are further categorised into individual segments (or "objectives"), which are then taught and tested separately. Instead of viewing knowledge as personally constructed and integrated, pupils conceive of it as existing outside of the human mind and as something which can only be understood by testing it within a controlled setting. Lukes (1973:110) has given this conception of knowledge accumulation and generation the name, "methodological individualism;" it has served as the guiding principle in our conceptualisation of how knowledge should be treated in primary schools.

Individualism is also reflected in most primary schools through the adoption of an "official" curricular policy of moral relativism. While there are clearly subtle systems for the social control of "acceptable" school knowledge and values (e.g. Anyon, 1979; Apple, 1986; McLaren, 1986; Popkewitz, 1987), schools present themselves as "neutral" institutions in which all beliefs are considered of equal value. Schools thus promote the supremacy of individual opinion over the struggle to establish curricular values for the common good.

Through an emphasis in American schools on competition, individual achievement, utilitarian skills, the atomisation of knowledge and official moral relativism, individualism has become an underlying foundation for American society's primary curriculum. In this manner, individualism is persuasively woven into American children's consciousness. As in American society at large, the individualism upon which schools are based creates a curricular structure which ironically results in the promotion of social conformism and personal alienation (e.g. Greene, 1973; MacDonald and Zaret, 1975; Pinar, 1975). However, just as it is in the larger American society, there are individual teachers and schools consciously at work to establish a more balanced, community orientated education for children (e.g. Goodman, 1987; Mayhew and Edwards, 1966; Teitelbaum, 1987).

Critical Democracy and Radical Educational Reform

Popkewitz (1983) has convincingly argued that formulating a vision of what education "should be" cannot be accomplished without addressing the type of society in which one hopes to live. For the purpose of our argument, we have offered an image of critical democracy to give form to the nature of society which is worthy of establishment. Clearly, the education of children, alone, cannot produce the type of alterations necessary to transform American society from liberal, political democracy into critical democracy. Political analysts such as Barber (1984), Boyte (1980, 1984) and Gran (1983) illustrate several strategies in various spheres of society which can help move America towards critical democracy. Eventually, fundamental changes in all of America's economic and social institutions will be needed to build this democratic ideal. However, as Dewey (1922:127-128) argued, children

> are not as yet subject of the full impact of established customs, [therefore] the chief means of continuous ... social rectificatin lies in utilizing [sic] the opportunities of educating the young to modify prevailing types of thought and

desire.

In acknowledging the need to transform society through the modification of America's public consciousness, it is essential that children's education be seen at the core of democratic activity *prior to* changes in other spheres of society, *during* any changes which take place in these spheres and *after* social and economic institutions have fundamentally altered

In building critical democracy, there is clear need for radical educational reform As previously mentioned, it is not possible to address educational reform outside of a particular social, political and cultural context Therefore, the reform of primary schooling to foster critical democracy in the USA must confront America's national preoccupation with individualism.

However, Cagan's (1978) analysis suggests that much of what passes for radical school reform" proposals fails to address adequately the tension between individuality and community The response by many radical reforms to the authoritarianism and repressiveness found in traditional schools has been misguided in that it has fallen back upon the same individualism in American society which inhibits genuine democratic forms of social arrangements to emerge For example, many radical reform proposals emphasise catering to the individual child's interests and needs A S Neill (1977:114), a leader in radical school reform has articulated this orientation in this way

> We must allow the child to be selfish ungiving free to follow his own childish interests through his childhood When the child's individual interest and his social interests clash, the individual interests should be allowed precedence ... I believe that to impose anything by authority is wrong. The child should not do anything until he comes to the opinion his own opinion that it should be done.

For many radical educators, any restrictions (except in situations which involve the safety of children) on an individual student's ideas or behaviour is seen as inimical to self development and freedom

Given this orientation, the notion that education should deliberately influence the values and subsequent actions of children is anathema to many radical educators In reviewing the literature on radical school reform, one is struck by the insistence on personal liberty and the lack of attention given to the need for educating children in a manner which will develop their compassion; altruism, civic resonsibility to work for the elimination of classissm, sexism, racism, ethnocentrism or other forms of oppression, and commitment to work for the general welfare of our planet (Graubard, 1972, Gross and Gross, 1969, Silberman, 1973) By locating liberty within a strictly anti-authoritarian context, many proponents of radical school reform project an agenda which legitimates the individualistic ideology that dominates American society, and as such they fail to offer a truly critical alternative to traditional education

Cagan (1979) has noted that conscious effort to influence the values and character of children should only be undertaken if there are compelling reasons The impact of individualism upon American society provides such compelling reasons If primary schooling in the USA is to be reformed to promote critical democracy then its organisation and practices must be deliberately established to cultivate a "connectionist" perspective among its administrators, teachers and students, that is, a perspective which places one's *connection* to the welfare of our planet at the centre of the educational process.[4] Developing primary curricula which foster this connectionist perspective in schools is essential for counter-balancing the impact that individualism exerts upon our children and society.

In a society which takes the values of self-interest and individual achievement for granted, a primary curriculum which fosters a connectionist perspective reflects a radical departure from the status quo. However, merely calling for a curriculum which will move our children towards a more balanced consciousness does not address the necessity for discourse on what form and substance this curriculum needs to take. Most writings in "critical pedagogy" (educology) often operate on an obtuse level of abstraction with few clarifications for gaining an extensive understanding of the meaning and intent of the authors. As Ellsworth (1988 2) has written,

> [T]his language [is] more appropriate (yet hardly more helpful) for philosophical debates about the highly problematic concepts of freedom, justice, democracy, and "universal" values than for thinking through and planning classroom practices to support a political agenda.

Efforts to portray events which illuminate critical approaches to curriculum have been the result of self reflection reports located at the university or high school level (e.g. Berlak, 1988, Ellsworth, 1988, Lewis and Simon, 1986). Critical practices portrayed within primary schools are particularly rare. When found, they are usually chronological descriptions of events without careful articulation of those practices which would guide others interested in critical curriculum alternatives. It is with these thoughts in mind that the connectionist aspects of Harmony's primary curriculum are illustrated. The lived experiences of the educators and students at Harmony's primary school lend insight into the process of creating a primary curriculum for critical democracy.

Harmony's Elementary Curriculum

As one might suspect, locating a school which attempts to promote democratic ideas, values and actions among its staff and students is not easy in a countrty which finds itself in the middle of what Shor (1986) has refered to as,a "conservative restoration." As Finkelstein (1984 280 281) has noted,

> For the first time in the history of school reform, a deeply materialist consciousness seems to be overwhelming all other [educational] concerns. Contemporary reformers seem to be recalling public education from its traditional mission ... to nurture a critical and committed citizenry that would stimulate the processes of political and cultural transformation and refine and extend the workings of political democracy. Reformers seem to imagine public schools as economic rather than political instrumentalities. They ... call public school to industrial and cultural service exclusively ... to enhance the process of industrial development, and to extend the competitive reach of America's economic, cultural, and social elites. ... Americans for the first time in a one hundred and fifty year history, seem ready to do ideological surgery on

> their public schools -- cutting them away from the fate of social justice and political democracy completely and grafting them instead onto elite corporate, industrial, military, and cultural interests.

Within the environs of Bloomington, Indiana, we sought and eventually found a school which offered a curriculum consistent with critical democratic values. We did not enter Harmony with a detailed prescription of education for critical democracy. Initially, we were simply interested in observing what type of education existed. The management and teachers of the primary school had expressed a desire to create educational experiences suited for a "democratic" society, and the school saw itself as providing alternatives to the traditional practices found in most schools. Our understanding of specific educational practices for critical democracy and the importance which the values of community and individuality play in establishing the democratic ideal has emerged from working with Harmony's teachers and students.

Harmony operated as an independent school, outside of the public (i.e. government) school system. It was established as an alternative to traditional schools, and during the previous 15 years (prior to 1988), it had developed an explicit democratic mission. The Harmony school brochure states that the school seeks to "foster the skills necessary for active and constructive participation in our country's [i.e. the USA's] democratic process." In his article, "A Case Study of Praxis," the curriculum coordinator at Harmony wrote, "[W]e seek to encourage the learner to be an active discoverer of knowledge as well as a critic of social injustice" (Baron 1979:48). During job interviews with prospective candidates for a teaching position, teachers described the school's goal as "liberating," "emancipating" and "empowering."

During the period of this study, there were 66 students and 6 teachers in Harmony's primary school. The teachers came from various social and economic backgrounds, although all were white and (economically speaking) roughly middle class. While the staff was relatively homogeneous, there was a conscious effort to recruit students from diverse social, cultural, economic, gender, racial and ethnic backgrounds. Students came from all parts of Bloomington (where Harmony is located) and from the nearby rural areas. Although Harmony's annual tuition of $3,100 (US currency) distinguished it from the local public schools, only a few students came from upper middle class families. As stated in the Harmony brochure,

> The school has maintained a student population made up of children with a diversity of interests and backgrounds ... [and] puts an emphasis on serving children most in need -- often from low income, single parent families.

In fact, during the year we observed, only one student paid full tuition. If parents could not afford the total tuition, they were asked to pay 7.5% of their net salaries after taxes had been deducted. Two-thirds of Harmony's operating costs were obtained through grants and local fund raising efforts. While the majority of the student population was comprised of middle income, white children, approximately 20% had Afro-American, Native American (American Indian) or Latino (Spanish American) backgrounds. A couple of the children whose parents were associated with the local university (Indiana University) were from foreign countries.

Harmony's primary school was divided into lower (grades 1-3) and upper (grades 4-6) programs. The morning classes were departmentalised by subjects, with the exception of the first grade, which was self contained. The week was divided into time periods, each with a specific function:

Family Meetings	Met Monday mornings for 30 minutes. Lower and upper primary programs met together to discuss school related issues.
Program Meetings	Met Tuesday, Thursday and Friday mornings for 30 minutes. Each program met separately to discuss program related issues. On the third Friday of each month, Quiet Hours (see below) were postponed and Program Meetings lasted 60 to 90 minutes.
Peer Group Meetings	Met Wednesday and Friday mornings for 30 minutes. Children formed themselves into multi-aged, year-long, on-going small groups to discuss school and interpersonal issues. Each Peer Group was facilitated by a teacher.
Quiet Hours	Met Monday through Friday mornings. There were two 70 minute Quiet Hours (language arts and mathematics/science) in the lower primary program, and three 45 minute Quiet Hours (social/natural sicence, language arts and mathematics) in the upper primary program.
Research and Discovery	Met Monday, Tuesday and Thursday afternoons for 50 minutes. Students worked on independent study projects.
Exploration Time	Met Monday, Tuesday and Thursday afternoons for 45 minutes. Teacher created, topical, cross graded (multi aged), courses which emphasised student projects. Students selected a new course each month.
Creation Time	Met Wednesday afternoons for 105 minutes. Teacher created, cross graded courses in the fine and performing arts, handicrafts or community service. Students selected a new course each month.
Recreation Time	Met Friday afternoons for 105 minutes. School field trips and/or activities which involved physical activity.

Harmony's curriculum incorporated many features often found in independent schools with a progressive educational tradition. The student to teacher ratio was kept low (approximately 11 to 1). Curriculum content was determined at the classroom level. Students were exposed to an expansive rather than narrow knowledge base. Students were given greater opportunities to study topics of their own interests, and students' interest in subject matter and learning was consciously cultivated. Instructional strategies were often personalised to reflect children's unique styles of thinking, learning and talents. Cooperative, non-competitive learning experiences and relationships were emphasised. The emotional well being of children was regarded as being as equally important as their intellectual development. Teachers involved themselves in helping students and their families work through difficulties in their personal lives if asked and/or if needed such as when these problems prevented students from learning As might be expected, student alienation within Harmony was low Students felt that the teachers and administrators were their allies and friends as well as their teachers, and most students were actively engaged in their education

Towards a Connectionist Curriculum

As observations proceeded, we could see clearly that students were being provided with an education balanced between the values of individuality and community Students were encouraged to grow as unique individuals, to become thoughtful and active participants in their own learning, to cultivate a sensitivity for their fellow students' lives and to develop their sense of social concern and responsibility (Goodman, 1988) However, due to the power of individualism in the USA, schools such as Harmony need to emphasise values of community to a greater degree than individuality Primary educators need consciously to create a *connectionist* curriculum, rather than a *balanced* curriculum, if they are to nuture effectively critical democracy in our society As Cagan (1978 265) notes, it is perhaps easier to establish this type of education in independent schools than in most of our current public (i e government) schools Creating a primary curriculum for critical democracy in public schools would be difficult without major shifts in societal priorities and values Nevertheless, practices at schools such as Harmony do provide an opportunity to identify curricular practices for those educators in a variety of settings interested in developing a connectionist curriculum to counter balance the dominance of individualism in American society

Building a Connectionist Rationale

As children grow up in a given society, they are exposed to numerous and at times conflicting messages about why they should learn The dominant message in the USA is that schools provide children with the learning necessary for them to participate *as individuals* within the presently constructed society Most students did not enter Harmony's primary school with much interest in democracy or establishing a more just and caring community America's mass culture and economic system do not emphasise commuhity values and actions among the general population and the children who attended Harmony were not impervious to the influences of societal values However, in Harmony, as in most schools there were moments throughout the year when the rationale for attending school was directly or indirectly discussed with students (e g as an introduction to the new school year, in response to students' questioning why they had to learn some particular content) At these times, it is essential that children be asked to consider a connectionist rationale for learning and attending school A connectionist rationale emphasises the view that children need to learn not just to achieve some individual goal but rather that learning is a social responsibility Children need to be exposed to the view that the reason for learning is to give them the intellectual tools for constructing American society into a more democratic just and caring place to live. Students need to hear that democratic societies cannot grow and develop (let alone survive) unless its citizens are well informed and have the educational abilities and sensitivities needed to examine the world critically. Students need to be asked repeatedly to consider the viewpoint that their learning is not just for their own benefit, but for the well being of society (and the world) as a whole. Harmony's teachers clearly expressed views that suggested schooling should be seen as a means for making the world a better place to live. However, when we asked most teachers about their goals for having students learn, their answers often reflected an individualistic orientation. As one of the lower primary teachers stated,

> I want kids to have the education they will need to live whatever kind of life they want. The most important thing is that they are happy in what they do. If they want to be some type of professional, we want to give them the education that will provide the opportunity for them. On the other hand if they want to be a stable hand, that's fine too, if that's what gives them the most meaning in their lives. Hopefully, we provide them with the education that makes it possible for them to make intelligent decisions about their own lives.

This teacher's rationale emerged form her concern that American children are pressured to conform to an overly narrow set of values and lifestyles. Several teachers mentioned that they believed schooling should be designed to help their students live "the life they want to live," rather than merely fulfilling the labour and consumer needs of our corporate economy. We observed the expression of this rationale in one form or another at various times throughout the year. When asked why attending school was important, the vast majority of students (about 75% of the students were formally or informally interviewed) responded in individualistic terms, e.g. it is important for employment, for income or for personal goals, such as university admission or travel. Only 10% of the students answered in ways which suggested their education was, in part, designed to help them create a more compassionate, caring society. An understanding of the relationship between (1) personal freedom and opportunity and (2) social responsibility is extremely difficult for children to achieve, given America's individualistic society. In order to promote critical democracy through education, children need to be exposed to a connectionist rationale for learning whenever the opportunity arises.

Teacher Authority

The radical reform of schooling for critical democracy projects an active role for teachers to construct the type of education required. Teachers need consciously to create rituals and structures, develop curriculum content and instructional activities and act with reasoned authority in order to nourish a connectionist perspective within children. The notion that children do not need conscious, adult intervention regarding social values and interaction stems from the sentimental and problematic assumption that children will (if only left alone) "naturally" become concerned with the well being of the world around them. Children in American society have difficulty putting the common good in front of their own immediate desires and extreme forms of "personal freedom" will just as likely (if not more so) result in anti-social, egotistical conduct among children. Children's true individuallity (rather than their self indulgence) can only grow within a community structure in which there are restrictions and expectations placed upon the individual by that community. As Dewey (1922) has argued, human beings are not "naturally" good or bad, intelligent or foolish, or ethical or amoral. As individuals, all people throughout their lives have contradictory impulses to act and feel in an infinite number of ways. While Dewey rejected the behaviourist view that human beings are "created" by external experiences, he recognised the interactionist relationship which exists between the individual and the environment. From Dewey's (1922) perspective, social arrangements (and in particular schooling) are crucial to the development of the character of a people and their society.

Without a clear understanding of the relationship between the values of individuality and community, teachers at Harmony had difficulty exercising the authority needed to promote critical democracy. For example, one of the teachers, Barb, who had been at Harmony just one year prior to our observations, expressed a clear commitment to the promotion of community values among the children. However, she also had strong libertarian views when it came to her educational philosophy. She on at least one occasion voiced her doubt about whether "adults should have authority over children." During the year, she vacillated. At times, she gave students near total freedom to "do what they want." These periods lasted until Barb became frustrated with the students who did little productive work and who often disrupted those few students who seriously worked. Then she went through a period in which she was more directive, and she required students to work together and complete expected assignments. Eventually, she felt guilty about exercising this control, reasserted her belief that "children should be in charge of their own learning" and once again gave students licence to "do what they want." As might be expected, Barb spent considerable time dealing with her students' anti-social behaviour. Throughout the year, Barb expressed her inner turmoil to us as she struggled to understand what authority she should assume. The teachers who seemed to be the most effective from our observations were those, such as Jo, who clearly exercised her authority to direct what happened in her class, but did so with the common good uppermost in her mind and with visible sensitivity, respect and love for each student.

Teachers who wish to promote critical democracy in American society need a solid foundation *viz à viz* the issue of teacher authority. The effectiveness of any given instructional strategy depends upon the ideological underpinnings of the teacher. The issue of authority can be extremely complex, and yet an understanding of it is crucial in order to establish a connectionist curriculum within a school or classroom.

Negotiated Learning

In rejecting the notion of "student centred" education in favour of teachers' authority to establish a connectionist curriculum, it is important to emphasise the exercise of authority in order to promote students' sense of efficacy within reasoned limits. This tension was most noticeable in Harmony through the way in which teachers and students negotiated what was learned. Students at Harmony were required to attend class and complete assignments, however, students also had numerous opportunities to make academic decisions. They selected the Exploration and Creation Time courses each month, and they chose, in consultation with their teachers, the topics for their Research and Discovery projects. They had scope within the Quiet Hour assignments to make some choice of what they wanted to study within structured parametres. For example, during April and May, Julie's class decided to study "ancient cultures." The children formed themselves into small study groups and chose a culture about which to research (e.g. Greek, Chinese, Russian, Japanese, Indian, Medieval English, Egyptian). Julie then gave each group the following assignments:

1) Ten to 15 dates from each pupil for the class timeline (the time line was posted on the classroom wall);
2) Each group was to make a map which showed the location, main sites and features of the civilisation chosen for study;
3) Each individual pupil was to write a "Back in Time" story in which the pupil pretended to be a person living in the ancient civilisation; pairs of pupils were permitted to write dialogues;
4) Each group was to make a poster which showed the writing system used in the culture chosen for study;
5) Each group was to find answers to questions which classmates asked during class discussion about the culture;
6) Each individual pupil was to do some reading about the chosen culture; the pupils were to negotiate the specific reading and amount with the teacher; the reading was to include at least one historical book and one folktale; pupils were encouraged to look at pictures, paintings and other artifacts from the culture and to view filmstrips aboaut the culture;
7) Pupils were encouraged to conduct other group projects such as making models, investigating some aspect of culture (food, religion, tools, clothing, famous people), creating artwork;
8) Pupils were advised that the products of their work would be displayed in the room and, if of sufficient quality, at the school Spring Festival.

Once the pupils received their assignments, teachers remained open to negotiation with students about specific demands. Students often asked if they could omit a particular set of mathematics problems, story in their reading books or some writing task. Teachers would grant or deny permission or offer an alternative task, depending on the circumstances. At times, teachers would initiate the negotiation. During one Research and Discovery class session, Barb approached a group of boys which had chosen to make a claymation movie about dinosaurs. The boys had been examining photographs and making some initial clay models. Barb had noticed that one pupil's figure looked much more like a bird than a dinosaur. She asked him about it and said:

> We don't really know what dinosaurs looked like because no human beings were alive then, but we have found skeletons, so we have some ideas. What you have here is fine, but you have to show me that your view of dinosaurs has some support based on what information we do have.

After she left, this student began to look more closely at the photographs, and he altered his figure.

The dynamic of permitting students choice within parameters set by the teacher was central to Harmony's view of using education to prepare children for democratic participation in society. During a group discussion at an "Alternative Schools Conference," Harmony's curriculum was criticised by several participants for being "too coercive" (not child centred enough). Dan, Harmony's curriculum coordinator, typically responded to such criticisms in this way:

> Letting kids "do what they want" is not empowering. In life no one can always do what they want. Kids need to learn how to arbitrate; to come to mutual respect and understanding. We don't see conflict between teachers and students as a bad thing. Conflict can be very empowering. We provide kids with the opportunity to successfully [sic] negotiate what they and their teachers feel is important to learn. This helps them become more empowered because they have to articulate their reasoning for exploring something other than what was originally planned.

The process of negotiating curriculum with Harmony clearly did not result in repressive educational conditions. When asked by us, teachers, or parents what they liked about Harmony, students almost unanimously mentioned their power to make choices about what and how they wanted to learn.

Teachers and administrators who wish to establish a connectionist curriculum in their classrooms or schools would do well to learn the art of negotiating with students in order to determine curriculum content and learning strategies used to explore this content. Neither child centred nor rigidly controlled, textbook determined curricula provide the dynamics needs to teach young people how to live in a democrtic society. Establishing a connectionist curriculum within classrooms calls upon teachers to engage students actively in making academic decisions and thus balance the individual needs of students with the societal needs of an informed, critically sensitive populace.

Social Bonding

Perhaps the most important strategy through which Harmony promoted a connectionist perspective among children was in stressing the social bonds between students. This social bonding was manifested in several different ways: establishing a collective identity among students, providing opportunities for students to make collective decisions and teaching students the value of collective responsibility.

Throughout the school year, teachers provided opportunities for students to develop a collective identity. At the beginning, middle and end of the year the entire school would go on 3 to 5 day trips. While these trips had academic goals, the main purpose seemed to be the development of student cohesiveness. Peer Group meetings were specifically designed to help students resolve interpersonal difficulties and promote good fellowship. The teachers occasionally took their Peer Groups on special afternoon trips during the year, and a couple of them had Peer Group slumber parties (overnight social occasions) at the school. In addition to these meetings, teachers fostered a collective identity through the school's academic practices. Many assignments called for students to work in cooperative study groups. Often units of study were designed to give groups and individuals numerous opportunities to bring personal knowledge into the class and to share what they were learning and their work with other students and teachers. The school hallways were filled with the products of students' projects. Teachers often used terms such as "we" or "our" to describe the work which the class undertook, and the class as a whole received group rewards for work well done. There were no single desks in rows. Students worked at tables, in bean bag chairs and in lofts. Teachers frequently shared their concerns about the invidiousness of competition and comparisons between students' achievements, and they discouraged students from engaging in these practices. As a result, students felt (even when working alone) that they were studying topics *together* as a collective body rather than as isolated individuals.

Students spent considerable time in Family and Program meetings engaged in collective decision making. The primary purposes of these meetings were to (1) review existing rules, (2) establish student privileges through voting and (3) raise and discuss teachers' or students' concerns. For example, in one lower primary program meeting, the teacher began by asking students to express their concerns freely. They quickly listed destruction of gym balls, exclusion of children from playing games, teasing, throwing objects at each other and leaving rubbish on school grounds. Students then voted on the two concerns which they wanted to discuss in detail. The majority chose the topic of destruction of balls and teasing. Several students reported having seen classmates deliberately destroy balls. The teacher asked what action they had taken to prevent the vandalism. They replied, "Nothing," or "We asked them to stop, but they wouldn't." The teacher said that she would raise this issue at the next staff meeting. The students decided that in the meantime they would make and post signs in the gym and hallways to ask fellow students not to destroy gym equipment. With the second issue, teasing, the students discussed the way in which they were teasing each other and drew the distinction between teasing for fun and teasing for spite. One of the children pointed out that the older children had been teasing the younger ones. Once they had detailed the nature, frequency, perpetrators and victims of the teasing, the teacher stated that this issue would be brought to the attention of the next family meeting for its action.

Through Family, Program and Peer Group meetings, there was a conscious effort to teach students the relationship between freedom from restraint and responsibility towards others. For example, at several meetings, students voted to give themselves a number of privileges (use of unsupervised gym, open campus lunch hour for the pupils in year 6 or 6th grade and the freedom to eat lunch anywhere on the school groups, use of the school office telephone). During the vote for each privilege, teachers attached conditions to privileges to remind students that they had an obligation to conduct themselves responsibly. In relation to the open campus lunch hour, the 6th graders (year 6 or age 11 to 12) had the obligations to obtain their parents' written permission, to remain within a specified distance of the school and to return 10 minutes prior to the start of classes. Otherwise they forfeited the freedom of open campus lunch hour. With the privilege of eating anywhere on the school grounds, students were also obliged to avoid leaving rubbish on the grounds. When students broke the conditions of a particular privilege, teachers remonstrated them by emphasising the importance of understanding and of honoring one's responsibilities, rather than by imposing punishments and penalities.[6]

Teachers and administrative staff attached value to two closely related imperatives: (1) individual students must act responsibly; and (2) children (just as much as adults) must take collective responsibility for the well being of fellow human beings. For example, one of the reasons which motivated the teachers and administration to admit Jack (all children's names are fictitious) to the 5th grade (year 5) was his personal characteristics (very poor gross and fine motor coordination, impaired vision, significant speech impediment, emotional inhibitions). As Dan stated during the staff meeting to decide on the year's new admissions, the school needed such individuals "to help students learn to value differences among people." During the first half of the year, Jack encountered social rejection. Finally he asked Julie (a teacher) for help, and they decided to raise the issue at a program meeting. Julie started the meeting by saying that Jack had asked her to discuss his problem of not having made any friends with the group. Several students suggested that he stop teasing, hitting, making faces, poking and generally annoying other children. Julie suggested that perhaps Jack did not know how to make friends and that his annoying behaviours were a poor attempt to attract attention. Several students admitted that the rejection was not always Jack's fault. "Sometimes he's the one that gets picked on and teased." Another student suggested that these conflicts might have become "a habit." Julie asked what could be done. Several students suggested that Jack "just stop" being a nuisance. Julie said that that was a good idea, but it might be difficult for Jack since his behaviour is "a habit." She suggested that the students tell Jack, "Remember, we want to make friends," whenever he started annoying someone. Everyone agreed that they would try this procedure; they agreed to make a conscious effort to refrain from teasing Jack; and Jack left the meeting with a big smile on his face. As the year continued, Jack and the other students lapsed into old patterns of social interaction. However, each time it came to a teacher's attention, the teacher would work on developing the students' understanding and commitment to the importance of helping each other and taking care of each other, rather than merely reminding the students of predetermined rules for "proper school behaviour."

Collective responsibility was considered extremely important at Harmony, and it would often emerge as the result of spontaneous events. For example, during the autumn (August) camping trip, a new student was seen govelling around in the dirt while the other children were seated at a picnic table. Dan (a teacher), fearing that the child might be epilectic, approached the student when Paul (a student) called out, "Kick him once for me!" The other students laughed. After determining that the student on the ground was all right, Dan returned to the table and addressed the group of students in this way:

> **You people really have to help Paul. All of you have been hurt by things he has said, but if we laugh when he says mean things to others, he will continue to do it. You have to let him know that you don't like it when he says insensitive things to people, or he won't stop. It's not just Paul's problem, it's *our* problem.**

Because of the teachers' emphasis on providing experiences and constructing situations which promoted social bonding, students came to refer to Harmony routinely as an "extended family."

Conventional curricular practices in American public schools foster isolated and competitive learning dynamics. Some researchers have argued that these competitive practices seriously erode children's sense of compassion (e.g. Bryan, 1975) and that unless teachers deliberately present children with experiences which require caring relationships, the children reproduce destructive interpersonal dynamics and structures as adults (e.g. John and Johnson, 1974). Development of a connectionist curriculum in schools requires strategies for the promotion of social bonds among students. Mere "group work" on its own does not develop social bonding in schools. The development of social bonding requires intentional efforts to promote collective identity, decision making and responsibility among students.

Modelling

Adult modelling has always been a valuable way to teach children how to become more caring and selfless. During our observations of the daily routines and practices at Harmony, we were struck by the consistent warmth, helpfulness and concern which the teachers showed their pupils. Several teachers regularly tutored students outside of the normal work hours. Students repeatedly commented on teachers' availability and willingness to help. Teachers occasionally treated students to lunch to show appreciation for commendable student achievement. Teachers and students called each other by their first names, and they often hugged students, held their hands and used terms of endearment with the students. Students routinely asked teachers to help resolve disputes between students. The teachers' showed remarkable abilities in nurturing and comforting students in distress. While the teachers always confronted students commiting acts of selfishness, insensitivity and irresponsibility, the teachers also forgave students and rewarded them for eschewing anti-social behaviour. Students freely remarked on their teachers' care and concern for them, and the teachers fully involved themselves in their students' academic and social lives. Several students talked about their teachers as parents, e.g. "She has been like a mother to me."

Students accepted and emulated the models for conduct which the teachers presented. Students frequently reminded each other that their actions were models for other children. Students frequently (far more so than in public schools) helped each other with school work, offered comfort during moments of stress and demonstrated a noticeable concern for each other's welfare.

Teaching Connectionist Social Values

While modelling is an important component of a connectionist curriculum, young people need clear instruction to help them visualise the values needed for critical, democratic living. Given the current state of American society, a connectionist curriculum suggests that content be explored to sensitise children to the inequities of sexism, racism, classism, ethnocentrism and to the dangers of environmental degradation and other problems confronting the world in which children are being prepared to participate.

Teachers at Harmony routinely encouraged values of fairness, equity and justice through the curriculum. Many of the social science topics at Harmony directly addressed issues of racial and gender injustice and of social justice in general. Within virtually every unit of natural science at Harmony, teachers underscored the message to appreciate the natural environment, to conserve its renewable and nonrenewable resources and to maintain the natural balance of the eco system. At times, equity issues arose spontaneously. For example, Jim, a lower primary teacher, showed a filmstrip on UNICEF and read the text which accompanied the pictures. Where the word *brotherhood* appeared, Jim read *personhood*. One second grade (year 2) student corrected Jim's reading of this word, and Jim engaged the children at that point in a discussion about masculine words which reflect humanity in general. For "President's Day," Julie, another teacher, received in the mail a small picture of each president of the USA. She displayed the photos on the wall of her classroom. However, instead of merely glorifying these men on this day, as was being done in the vast majority of American classrooms, she engaged the students in a discussion about the presidency. She initially asked her students how many photos on the wall represented presidents who were women, members of a minority group or poor. The students also investigated which of the presidents owned slaves, which ones had responsibility for expropriating land from Native Americans (American Indians) and which ones did the most to promote human and civil rights. In addition to their efforts in the daily classroom lessons, teachers at Harmony promoted connectionist social values through visual symbols and slogans. The bumper sticker on the fender of Harmony's old school van read, "Question Authority." The school bulletin board always displayed posters in support of social, economic and political justice, e.g. the Nicaraguan Sandanista Revolution, Tibetian liberation, defense funds for midwives. The year's Spring (May) Festival theme was "International Understanding." Even the school custodian exemplified a deep commitment to social and political justice to the extent that he was convicted for civil disobedience related to the Iran Contra issue. (The offense was public removal of a "John Poindexter" street sign in Oden, Indiana; it had been erected as symbolic of the local municipal government's approval of Admiral Poindexter's role in the Iran Contra affair.)

In a connectionist curriculum, subject matter can never be value neutral. Certain social, political and economic interests are always served at the expense of other interests through the curriculum in a given classroom and school. For example, while Harmony's curriculum devoted considerable attention to concerns about race, gender and ecology, it devoted relatively little time (although still far more than in conventional schools) to issues of class and labour. Perhaps this was because most of the staff originated from the upper middle class and took their social class privileges for granted. Perhaps they were not sufficiently aware of their social class privileges to be able to articulate the social class inequities which exist in American society. Given the recent rise to prominence of conservative ideology in America, in which the interests of women, minorities, labour, the poor and children have virtually been wiped from the political, legislative and judicial agenda, it is particularly important that direct curricular efforts be made to balance these prevailing values and attitudes found in the larger social context. At the same time, it is important that in directly teaching children certain social values over others, these curricular practices do not degenerate into indoctrination. As the curriculum coordinator of Harmony said,

> We want our students to be critical thinkers more than "radicals." Since many of our parents (and therefore their children) have liberal [i.e. progressive or reformist] beliefs, myself or other teachers often find ourselves arguing the conservative perspective to ensure it gets a fair hearing.

As Kelly (1986) illustrates, this practice of "fair hearing" is necessary when teachers make the commitment to teach social values directly to children.

Community Involvement and Social Action/Service Projects

Although our society presently is not structured to permit children opportunities to contribute directly to its maintenance, children can become involved in activities which specifically encourage values of social responsibility. As Giroux and McLaren (1988:237) have said

> It is an unfortunate truism that when communities are ignored by teachers, students often find themselves trapped in institutions that ... deprive them of a relational or contextual understanding of how the knowledge they acquire in the classroom can be used to influence and transform the public sphere. Implicit in the concept of linking classroom experiences to the wider community is the idea that ... students and teachers can engage in a process of deliberation and discussion aimed at advancing the public welfare in accordance with fundamental moral judgments and principles.

There were several opportunities for Harmony students to become informed by and involved with local, national or international activities. The students made weekly field trips into the community as part of their on going studies. A number of Exploration courses specifically focused on the local community, as the following two course descriptions illustrate:

> *Bloomington Works!* Ever wonder what happens in a hospital? Ever wonder how people can drink water from Lake Monroe? Ever wonder where poop goes after you flush the toilet? We'll travel all over town to find out.
>
> *Underground.* We'll explore what happens "underground." We'll visit the city sewers, a construction site, the stream that runs under the shopping mall and the basements of Harmony and Indiana University Union, and we'll go caving.

Guest speakers from the community provided a frequently used resource for learning. The month (May) of the Spring Festival was named "International Month" at the school, and during that month, the school received visitors from Japan, Brazil, China, Egypt, Turkey, Israel, Saudi Arabia, South Africa, Indonesia and Nigeria. Each teacher taught a unit on a given culture, and students wrote papers and made presentations about a culture of their choice for their Research and Discovery course. Throughout the month, students participated in numerous discussions on international trust, understanding and peace. They placed particular emphasis on America's relationship with the USSR.

During 1987-88, students at Harmony participated in several social action projects for worthwhile causes (e.g. see the editorial page in the June, 1988 issue of the *Kappan*). A number of Exploration Time courses were designed specifically around social service projects (e.g. working with the elderly, creating a recycling centre), and assignments in these classes included activities such as writing the federal government protesting its policy on endangered animals, distributing petitions to preserve Native American burial sites in Indiana and leading a drive to encourage people to use the local recycling centre. Sixth graders (year 6 students) had the obligation to perform at least 10 hours of community service as one of their graduation requirements. During program and family meetings, students voted to disallow "war games" on school grounds, discussed whether they should avoid using plastic bags as lunch containers, signed (on a volunteer basis) a banner for anti-nuclear testing demonstration and established a pen pal correspondence program with children in South Africa. As one parent stated,

> I like that my child has learned about peace movements, ecology, racism, women's rights, and other issues. Several years ago, the elementary [primary] school was in Washington, D.C. on a field trip, and there was a protest march against nuclear weapons and power. Over 200,000 people were there, and through a fluke, Harmony students got to lead the entire march.

Harmony's students had numerous opportunities to use their knowledge of the world and their artistic, communicative and organisational talents, as one fourth grade girl said, to "make the world a better place to live." While these projects were significant, there was a need to integrate more dialogue into these activities. On several occasions teachers discussed the importance of feeling a sense of connection to people in the local community. They expressed concern for those involved in progressive, national and international social struggles. They acknowledged our collective responsibility to care for the planet. Yet, between students and teachers there was a conspicuous absence of discourse related to several of these social action projects. As a result, a number of students only superficially participated in them. For example, 6 of the 6th graders looked at their graduation requirement more as a "job training" assignment than as a community service. Without substantive discourse, students too easily missed the significance of working to make this "world a better place." Nevertheless, becoming involved in social action and service projects seemed particularly powerful in fostering a connectionist perspective within students. As Ellsworth (1988) has noted, too often critical educators couch their curricular proposals in abstract political terms such as "liberation" or "social justice" without providing specific historical and social examples or contexts. She has suggested that this omission significantly undermines the goals of these educators who claim to be working in the interests of the oppressed and disenfranchised.

Freedom of Expression

Although teachers need to have a clear commitment to a connectionist perspective, they must avoid imposing this perspective upon unwilling students. If they are to foster critical democracy, then they must permit genuine, freely chosen, well informed, carefully reasoned and uncoerced change of consciousness. In advocating for connectionist curriculum in primary schools, teachers, administrators and interested third parties must avoid installing school arrangments and executing practices which result in valuing social conformism rather than community (Cagan, 1979). For example, some schools which place a strong emphasis on the value of community (such as those found in the USSR, China or fundamentalist religious groups) have in fact established curricular practices which promote social conformism (e.g. Bronfenbrenner, 1970, Kessen, 1975, Peshkin, 1986). Requiring unquestioned obedience and passive acquiescence to adult authority at all times, equating patriotism with the value of community, creating cult figures such as Joseph Stalin, Mao Tse-Tung, or a particular religious leader to be blindly revered, stressing rote memorisation and "correct" answers to complex moral questions, placing so much value on group solidarity that the individual who disagrees becomes "silenced" through intimidation — these are but a few of the curricular practices which result in an education for social conformism rather than community. To be genuinely effective and democratic, the effort to influence children's values in the direction of a connectionist orientation must be done in an atmosphere in which children can freely examine and express their convictions without fear of intimidation and coercion.

This freedom of expression is particularly necessary when involving children in the types of social action projects found in Harmony. The proper purposes of social action projects are to encourage children to see a connection between their education and the goals of "making the world a better place" and to engage in dialogue over what ideas and actions will promote this better world. However, teachers should not become social activists who enlist children mindlessly, callously or ruthlessly for particular social causes. Teachers must not assume a narrow political agenda and use their position as teachers merely to promote this agenda. Recognising that curriculum will always promote a political agenda of some sort does not give teachers licence to turn schools into institutions of ideological coercion and activism.

The Harmony school staff showed an acute concern for balancing freedom of expression with promoting connectionist social values. For example, the school director once made the remark,

> I wish our students left here with a greater political commitment. *I don't mean we should indoctrinate them* [his emphasis], but I would like it if they left here a little more committed to being politically active.

Perhaps our first notable observation on this matter was the enormous freedom to express themselves which most students at Harmony felt. There was no dress code to follow nor censorship of students' ideas. If students did not want to participate in activities with overt political implications there were genuine efforts made to find them alternative activities. Students were consistently encouraged to speak their minds in meetings and class sessions. When teachers raised issues about course content, school policy of students' anti-social actions, they never expressed disapproval of students who disagreed with their views. Often individual children who seemed shy and withdrawn would be called on for their opinions and if necessary privately counselled in an effort to help them feel more confident and comfortable. However, what the teachers did not give enough attention was students' lack of attention to what was being said. Often, we observed during meetings instances of students failing to listen to their fellow students' ideas. Occasionally, inattentive students disrupted the dialogue in process. Too often teachers dealt with the situation by pretending not to notice the students' inattention and interruptions. At times, teachers used libertarian philosophy to rationalise their pretense to ignore student inattention. As one teacher said,

> As long as they don't disrupt others from working, I don't think we [teachers] should *force* [her emphasis] them to pay attention to everything that is going on. Kids have to realise for themselves why learning is important, and this won't happen if we impose it on them.

The fallacy in this rationalisation is that freedom of expression must be a two way street. Critical democracy needs individuals who are capable and willing to express honestly what they believe, but it also needs people who listen carefully and critically to what others say.

Conclusion

If primary curriculum is to be seen as a vehicle to promote critical democracy in American society, it must foster a connectionist perspective among children. Curriculum needs to be consciously designed and implemented to move children towards values of social bonding, caring and responsibility in an effort to counter balance the individualism which dominates public consciousness. At the same time, it must avoid those practices which undermine students' moral and intellectual authonomy. The traditional approach to radical school reform with its emphasis on "individual liberty" does not offer the vision needed to build a compassionate, just, caring and democratic society.

Expressing a connectionist rationale for learning, promoting social bonding, providing adult modelling, teaching critical social values, establishing social action projects and encouraging freedom of expression offer educators some direction for creating a connectionist curriculum within a given school or classroom. However, it is important to remember that emphasising community values among children is in fundamental opposition to the dominant ideological patterns and institutional arrangemnets found in modern American life and schools. It is unlikely that the connectionist aspects of Harmony's curriculum, even if more widely implemented, would be sufficient to alter societal values by itself. Nevertheless, it is important to avoid falling into what Giroux (1983) refers to as a "discourse of despair" in which the actions of teachers and students to create change is seen as futile or naive in the face of pervasive social, economic and cultural forces. As a result developing a connectionist primary curriculum needs to be seen as part of a broader social and political movement.

Radical curricular reform can not be achieved by conceptualising "grand theories" in the halls of academia and then "handing them down" to teachers and administrators. Often critics have been overly dependent on "grand theories" and abstractions in promoting their educational and social agenda. As Bowers (1982:546) notes, this dependence on imaginary teachers and students has "prevented them from testing their theory against the phenomenological world of people involved in concrete social and cultural relationships." As Aronowitz and Giroux (1985:154) have stated, we must move beyond curriculum critique to a "language of possibility." However, this emerging language will have the greatest impact only if it is grounded in the lives of real people engaged in real struggles. Take, for example, the term *empowerment* which has often been identified as a key concept in this "language of possibility." This term was initially generated as a reaction against educational practices which reduced students to passive consumers of normative knowledge and skills needed to fulfill the labour needs of our society as presently constituted. However, conservative and mainstream educologists have begun to use "empowerment" to justify their own agenda. Rather than empowering students to recognise gender, racial, class and other forms of oppression and helping them develop a worldview and civic strategies in order to play an active role in transforming society for the common good, *empowerment* (as used by many educologists today) refers to providing special training programs or skill curricula which give individual students more "power" to take advantage of the opportunities offered and constraints imposed by an ever changing corporate capitalist economy. Without clear images in which to ground this "language of possibility," the political and cultural context from which this language emerges is lost. As a result, conservative and traditional educologists can (and have) effectively stripped us of the use of this language as an effective expression for critical change. Neutralising critical concepts which gain popularity by separating their names from their political content has been shown to be a much more potent response than proposing different concepts based on conservative or traditional ideologies and visions of schools and society.

The images of curricular practice which emerge from Harmony's primary school serve as a catalyst to re-think curricular reform in terms of democracy and its relationship to individuality and community. However, developing curricular practices for critical democracy requires more than just a conceptual framework. It is equally imporant to see how intentions can be manifested in given situations. This portrait of a connectionist curriculum for primary school provides a modest, but necessary and long overdue beginning.

Footnotes

[1] "We" refers to this author and two research assistants, Xiaoyang Wu and Jeff Kuzmic. We engaged in a joint effort of data collection and analysis.

[2] There are many complexities related to developing a concept of critical democracy and establishing its reality within modern society. However, it is not

within the realm of this particualr project to sort out these complexities and questions. The reader is encouraged to examine several works in the field of political theory (e.g. Barber, 1984; Crenson, 1983; Dahl, 1982; Gran, 1983; Pateman, 1970).

[3] For a more complete analysis of individualism in the USA and its relationship to education see Goodman, 1988a.

[4] The term *connectionist* was first introduced to this author by Michael Apple in an invited address during the 1987 American Educational Research Association meeting. In this lecture, Apple noted that he saw himself as a "connectionist," as he pointed out that we would not be able to have the present discussion if it were not for miners who were willing to work underground to obtain coal in order to provide energy for the electricity to the building.

[5] Harmony contains three independent schools (elementary [primary], middle and high school) and a teenage jobs program. The project team focused its investigation on the primary school for several reasons: (1) it was the largest of the three schools; (2) the author's main interest is in the field of elementary (primary) education; and (3) budget and time constraints made it necessary to limit the focus of the study. For a description of the methods used to collect and analyse data, see Goodman, 1988.

[6] Issues of student power and social control are more comprehensively discussed in Goodman, 1989.

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Education Under Attack: Recent Experience in the UK

J. R. Hough
Loughborough University
Loughborough, Leicestershire

Abstract

The school reform movement of the 1980s has progressed further and faster in the UK than in any other comparable country, and the reforms have arisen from a complex combination of demographic, economic, social and political factors. These factors have been at work in other comparable countries as well, but what seems to make the UK experience unique is the isolation and insularity of the school professionals, in attitude as well as in law, from parents and communities from the late 1940s to the 1980s. All of the story recounted in this educological analysis relates to the interaction of schools with their external environments, and it is demonstrative of what can happen in the way of rapid and extensive reforms when, all other factors being equal, school professionals collectively and persistently fail for too long to take heed of the changes in the social, economic and political milieux in which schools must function.

Introduction

Education under Attack may seem an emotive title for a review of recent educational developments in the UK, yet it is no longer possible to doubt that such wording is justified. When an authoritative review of the government of education in Britain was published in 1986, its first page listed the following major trends affecting the education service:

- the impoverishment of the service, starved of funds necessary for books, curriculum development, the maintenance of school buildings, as well as decent salaries for the teaching profession,
- the denigration of local authorities [i.e. local municipal agencies which govern schools within a municipality or district], teachers and the public service in general, which is demoralizing and alienating those who are striving to meet the needs of young people during a period of social change,
- the accelerating privatization of the service both directly, in the case of "post 16" [i.e. after 16 years of age] education, with the development of the Youth Training Scheme sponsored by employers, and indirectly, as parents are driven to subsidize their children's learning in the crumbling fabric of our schools,
- the reinforcement of a narrow, utilitarian, vocational preparation of young people, accelerating the reintroduction of "tripartism" [i.e. three separate and parallel types of schools] in education;
- the fragmentation of authority within education and between education and the training agencies, leading increasingly to confusion and disarray.

It went on to comment "This crisis is now finally eroding the foundation stones of purpose and power laid by the 1944 Education Act" (Ranson and Tomlinson, 1986) Just a few years later, the words *attack* and *crisis* seem even more merited each of the five major trends indicated above has been accentuated and the passing in 1988 of the Education Reform Act has heralded the most sweeping changes to the administration of education in Britain since the Butler Act of 1944 What have been the main external influences on the educational process in the UK in recent years and what is the prognosis for the remaining decade of the twentieth century?

Main External Influences

For a period of some 30 years after 1944, education in the UK saw unprecedented growth of schools, teachers and pupils, the development of comprehensive schools, the raising of the school-leaving age, the emergence of all graduate entry to the teaching profession, rising rates of staying on at school after the years of compulsory schooling, rising rates of entries and successes in external examinations, the gradual equalisation of opportunities for girls and a massive expansion of higher education During what has in retrospect been termed the "Secret Garden" era of education (Naybour, 1986) or "The Optimistic and Deferential Age" (Brighouse, 1988), there were, of course, a variety of external influences on education but they tended to be unnoticed, even unobtrusive, schools and teachers being left largely free to provide and run the education service this particularly applied to the determination of the curriculum that the children should study, which, in contrast to the situation in almost every other developed country in the world, was seen as essentially the prerogative of the individual school More or less throughout the period, there was a broad political consensus regarding the objectives and goals of education (Morrell, 1988) In retrospect, the period has also been dubbed, significantly, "Three decades of non-reform" (Peterson, 1988)

Precisely when the change occurred must be a matter for debate, but there would be widespread agreement that

> the confluence of forces which had worked to expand the education service in the 1960s had changed radically by the late 1970s Demographic and financial contraction, change in the nature of the work and employment, together with altered beliefs about the polity and education's place within it, all amounted to a considerable reversal of fortune for the service. [Ranson and Tomlinson, 1986]

By 1988, with the coming of the Education Reform Act, Morrell, the Labour leader of the Inner London Education Authority, could write

> the Government no longer seems to accept the validity of expanding the education service for under fives [i e under 5 years of age] Unemployment has expanded the post sixteen sector, scarcely the planned fulfilment [sic] of a goal The fixed assets are declining because of systematic low investment; de facto this goal has been abandoned An adequate supply of teachers has not been provided Geographical consistency of quality has lessened The service is not to continue free at the point of use Funding will come from a less progressive tax system The proportion of funding by Government has systematically reduced The principle of funding in ratio to social need is very much under threat under the proposals for poll tax and the uniform business rate Management in partnership with LEAs [local education authorities the municipal governments responsible

> for schools] has been set aside in favour of Government by decree. The comprehensive principle will founder if the free market access is implemented as will any possiblity of eliminating discrimination by social class or ethnic origin. The elementary justice of providing higher education for all that are academically qualified is no longer agreed.

One can not, however, see the changed climate solely in terms of a prolonged attack on education by a Conservative government and Prime Minister (in office from 1979). It was a Labour government that initiated cuts in public expenditure, including expenditure on education. It was a Labour Prime Minister, James Callaghan, who initiated the "Great Debate" on education with his oft-quoted speech at Ruskin College, Oxford in 1976 when he expressed concern that the needs of industry and commerce were not being met, thus reflecting "a lot of rumblings about schools' fitness to serve modern society" (Sallis, 1986). And it was a Labour government that issued the critical Green Paper *Education in Schools* the following year (DES, 1977). That speech and that Green Paper contained the seeds of much that has happened since. To quote a key section in the Green Paper:

> that the school system is geared to promote the importance of academic learning and careers with the result that pupils, especially the more able, are prejudiced against work in productive industry and trade; that teachers lack experience, knowledge and understanding of trade and industry; that curricula are not related to the realities of most pupils' work after leaving school; and that pupils leave school with little or no understanding of the workings, or the importance, of the wealth producing sector or our economy.

The new central concern of the DES lay, for the first time, with the curriculum (Simpson, 1986). This was a most significant development with far-reaching implications.

It would be difficult to deny that Prime Minister Callaghan and the Green Paper were reflecting the sentiments of disquiet over and dissatisfaction with the education service that had, rather paradoxically, developed and reached public prominence during the same years that saw the continuing development and expansion, at all levels, of the total education system. Perhaps the key variable here was rising expectations: more and more, and hopefully better, education was being provided, yet the public appetite for education of yet higher quality seemed insatiable. Even though the Bullock Report (1975) had found no evidence of declining standards of literacy, there was a widespread *belief* that standards had fallen, undoubtedly influenced by rising functional literacy demands over the last 30 years.

Another important strand related to the changing pattern of central-local relationships: by the late 1970s

> there is no question about the intention of central government under both Labour and Conservative governments to play a more positive role in policy making [Shipman, 1984]

Here again, it is noteworthy that governments of both major political persuasions were involved. Both Labour and Conservative parties produced policies in favour of a core curriculum, greater involvement of parents (particularly on school governing bodies) and a reduction in the powers of teachers (Deem, 1988).

It is now difficult to discern what was the intended division, as between central government and local education authorities (LEAs), of roles and powers implied in the 1944 Education Act, and in retrospect this may be seen to be a weakness in the Act. The drafters of the Act clearly saw the Minister as having important powers to direct the other partners, but the balance of power gradually shifted towards the LEAs (Ranson and Tomlinson, 1986a), and the ensuing twenty years saw

> the reluctance of the Department of Education and Science [DES] to plan the service [i.e. teaching service] beyond ensuring that the building programme was adequate. [Shipman]

In all other European countries, education ministries took a more interventionist approach, and the autonomy of schools and LEAs in the UK became a matter of comment by foreign observers.

The drift of power away from the Ministry of Education, later the Department of Education and Science, culminated in the DES effectively being prevented from setting up a committee to study curriculum matters in 1963, and in Crosland and Boyle, both ex-Secretaries of State for Education, denying that they had control of the curriculum (Kogan, 1971). But by the 1970s and subsequently, increasing centralisation was the order of the day (Lawton, 1986; Peston, 1986; Ranson and Tomlinson, 1986b). After the general election of 1979, this suited the new Conservative administration, intent on curbing the powers of Labour Local Education Authorities, extremely well. The "Great Debate" had seen the DES taking a close interest in what was being taught in schools, and by 1988, the introduction of the national curriculum, at the instigation of and largely developed by the DES, was one of the major proposals embodied in the Education Reform Act. There could scarcely be a greater change in the control of educational policy. Education is now at the forefront of public debate in the UK as never before. It was one of the major areas of controversy between the political parties at the time of the last general election in 1987, but it is impossible to understand the most recent controversies unless these are set in the context of the forces leading towards change over the previous decade or so.

The changing balance and the momentum towards centralisation, from at least the late 1970s, as outlined above, did not take place in a vacuum. They were the result of a series of complex interactions, essentially educological in nature. The protagonists in the recent and sometimes bitterly expressed controversies over changing educational policies often do not seem to give due weight to such longer term trends (Simon, 1988).

In analysing the "considerable reversal of fortune for the education service" (Ranson and Tomlinson, 1986a) since the late 1970s, much prominence has been given to demographic factors. The total number of children in schools had risen steadily over the previous one hundred years and had accelerated rapidly after 1944. It reached a peak of around 9 million in 1977. Since then, it has been falling steadily, and it will continue to do so for another few years. It will probably decline to some 7.5 million in the early 1990s. Remarkably little research has taken place into the causes of such profound demographic change, but the decline probably relates to some combination of changing attitudies regarding family size, rising social and economic aspirations, later marriage, changing patterns of careers for women and the increased availability of the pill and other forms of contraception. Whatever the reasons for the fall in the birth rate, fewer pupils to teach would be found to mean fewer teachers and other resources required. In some locations, especially when combined with the secular (longer-term) drift of populations out of inner city areas in Birmingham, Glasgow, Liverpool, Manchester and other major conurbations, lower birth rate would mean that some schools would have to be closed. Some LEAs faced the prospect that the number of 15 year olds in their schools would fall by half within 10 years (DES, 1980). Severest of all was the down turn in the work of teacher training institutions. With far fewer new teachers needed, between 1973 and 1983 annual intakes to teacher education were reduced from some 40 thousand to fewer than 16 thousand (Taylor, 1989).

As a principal cause of the "reversal of fortune" for education in the UK, however, the demographic factor leaves a number of questions unanswered. A very similar decline in the birth rate took place at about the same time in each country in Europe except Ireland (Hough, 1988), but in no other comparable country was the attack on the education service so fierce or so prolonged as in the UK. Similarly one can point to other sectors of national life where severe numerical decline was not accompanied by the general air of gloom and despondency which may be said, without exaggeration, to have characterised education in the UK in recent years. An example would be the armed forces, which, with less manpower and fewer establishments than 30 years ago, are now more scientifically and technologically orientated, give greater prominence to education and training and arguably enjoy enhanced prestige and social status. Further, the numerical decline caused by the lower birth rates could have been offset by rising rates of voluntarily staying on at school after age 16. The fact that it was not, to any great extent, is again indicative of changing public perceptions of education. Unless size of system or of institution is necessarily thought to be a good thing, numerical decline should have brought, and, largely unnoticed often did bring, new opportunities to do away with overcrowded buildings and classrooms, remove much disliked Portakabin type (relocatable) classrooms and lessen the pressure on other resources such as school libraries.

It was, however, because demographic contraction coincided with financial contraction that the combined effects -- for they could not be separated -- were felt so severely. Britain's economic and industrial performance had been poor since the end of the Second World War. In comparison with its competitors the country had year by year low rates of economic growth, problems with balance of payment deficits, above average rates of inflation and eventually severely rising unemployment. As these effects became cumulative the national economy entered a vicious circle from which it became increasingly difficult to escape. Low economic growth led to inadequate funds for reinvestment, thus worsening relative productivity. Balance of payments crises could apparently only be dealt with by fiscal and monetary retrenchment which in turn made industrial recovery more difficult. Increasingly, Britain lost its export markets whilst imports started to flood into the country in ever increasing quantities. By the late 1980s, even with the benefit of North Sea oil which was worth some £8,000 million per annum to the external account, a balance of payments deficit of over £1,000 million *per month* had become so commonplace as to attract rather little attention

Economic policies for retrenchment came to include cuts in public expenditure programs, including education, initially by a Labour Chancellor and then more enthusiastically by the Conservatives. Education sought to be seen as a causal factor in the economic growth process via its production of a supply, at successive levels and in various specialisms, of educated labour, although this argument was never well or coherently developed in the UK. Instead, education found itself on the receiving end of successive phases of cuts in expenditure, so that education's share of Gross National Product (GNP) gradually declined. Opponents of such financial stringency by successive Chancellors of the Exchequer found rather little support from the media or the general public. A summing up of the general public attitude might be that if something had to be cut it might as well be education

Education had lost much public sympathy. From having been seen in the 1940s and 1950s as a prime agency of individual opportunity and social change by the 1970s it was being criticised by both major political parties, and more widely by the general public, for having over insulated itself from the outside world in terms of future employment needs and links with parents. There was also growing uncertainty about standards of educational achievement. Education had come to have a bad press, not, of course, everywhere and all the time, but certainly to a much greater extent than previously. Increasingly epithets such as "demoralised" or "downhearted" were applied to teachers who were seen as "no longer delivering the goods to the community" as they had in the past

> they had been trained too feebly and too fast and then all of a sudden they were paid well under the market rate for the job. [Price, 1986]

The government's advisory committee on teachers pay, in a report issued in 1988, found that teachers' morale was dangerously low and that teachers felt a lack of public appreciation and recognition (*Independent*, 1988). Teachers were reported to be leaving the profession in increasing numbers at the same time as it became increasingly difficult to recruit new entrants of high quality, particularly in such fields as science, technology and modern languages

It is important to understand the above background of climate of opinion, of "disquiet of parents and politicians" (Ranson and Tomlinson, 1986a), which was largely in place by the time the 1979 general election saw the Conservative Party returned to power with Mrs Thatcher as Prime Minister. The disquiet became more sharply focused subsequently, partly due to the increasingly serious problem of unemployment facing young school leavers. Such mass unemployment, which rose steadily during the 1970s and early 1980s until perhaps 50 per cent of young people had some experience of unemployment after leaving school, was previously unknown in the postwar period. Unemployment has been seen as destroying the legitimacy of education, which clearly no longer led directly on to suitable jobs. It is possible to take issue with the various educational reforms introduced by successive Conservative administrations over the ensuing decade. It is possible to claim that changes were introduced too quickly or with inadequate consultation. It is even possible to claim that Conservative Secretaries of State for Education and Science were being vindictive in seeking to curb the powers of Labour Local Education Authorities But it is surely not possible to deny that major educational changes were being called for before the succession of recent reforms were introduced In the words of the Chief Education Officer for a large LEA, written just before the major reform proposals were announced "It cannot be said that public confidence in the education service is high" (Morris, 1986)

Public perception of education had deteriorated quite markedly over the previous decade or more Public opinion did not necessarily favour all the changes, perhaps not the creation of the City Technology Colleges and certainly not the increasingly severe cuts in educational expenditure But once an adverse climate of opinion was in place, it was relatively easy for a Conservative government to impose measures which accorded with their own political thinking, including both financial cuts and diverting public funds to private sector schools From the mid 1970s, as part of the government's measures to control public expenditure, total expenditure on education at first remained about constant in real terms, then started to fall in real terms and then, by the early 1980s fell in *monetary* terms (Hough, 1987) By the 1980s higher education institutions were having to readjust to the painful effects of a succession of financial cuts (Sizer 1987a b) whilst at school level the annual reports of Her Majesty's Inspectors commented on the effects of financial stringency in such terms as

> There are many schools with insufficient numbers of books, others with old stock which can not be replaced ... the disparities in provision both between and within LEAs and institutions are increasing ... the condition of much of the accommodation used by pupils and teachers continues to deteriorate [Her Majesty's Inspectors, 1985]

By 1988, with the debate on the Education Reform Bill such comments by an LEA Area Education Officer as,

> The speed and scope of the present proposals for change have left many gasping for breath and others applauding their radical nature ... we feel uncomfortable at having to question many long held assumptions and even beliefs ... the proposals promised the biggest shake up of the management of education that any [conference members] had seen in their professional lifetimes [Jones, 1988]

were no exaggeration There has been much discussion of the individual parts of the 1988 Act, notably the national curriculum, regular testing of children, local financial management, opting out, the creation of City Technology Colleges, the reduction of the powers of Local Education Authorities and the abolition of the Inner London Education Authority But, for our present purposes, it is more helpful to consider the package as a whole, coming hard on the heels of such measures as increased parental participation on governing bodies, loss of teachers' negotiating rights, tightening of teachers' conditions of service, teacher appraisal, the reform of external examinations and the loss of teachers' employment security (Deem, 1988)

There is a clear trend towards consumerism and the free play of market forces (Sallis 1986) Parents' representatives have now been given a much more dominant role on school governing bodies Parents will be able, to a much greater extent, to choose not only the school their children are to attend, but also facets of the life of that school It seems at this stage that some consequences will be clearly undesirable, such as the worsening of inequalities between schools and between children (Morrell, 1988) Many within education have argued vehemently against just about every change that the Conservative government has introduced The whole is seen as having "a disastrous effect on our public system of education" (Simon, 1988) It would be fair to say that amongst educational professionals there is widespread opposition to all or some parts of the new Act Some had argued in favour of some form of core curriculum but most were upset by attainment target testing and the reductions in professional autonomy A visiting Canadian professor of education (i e educology) recently recounted to the writer that during an extended tour of educational institutions in the UK he had not met one senior professional willing to argue in favour of the central tenets of the Act Yet none of the Act's many opponents has been able to claim that her or his view is shared by the general public not even the teachers' unions, whose vociferous opposition probably went further than the views of the general body of teachers The salient points to be embodied in the Act were clearly set out in the Conservative Party's election manifesto for the 1987 general election From this election the Conservatives were returned to power with an increased majority of over 100 in the House of Commons In a democracy such as the UK, a general election is a diffuse process It would always be difficult to claim that a majority of the populace was in favour of or against any single issue Further, in an imperfect electoral system the Conservatives secured their unexpectedly large majority in the House from only 42 per cent of the total vote Nevertheless, educational reform was a major and hotly debated issue during the general election campaign The main issues received a fairly thorough hearing, and despite all the faults of the general election process voters must be presumed to have had the opportunity to make up their own minds

The headline in the admittedly partisan *Daily Mail* Tories We'll End Schools Tyranny" (Simon 1988), probably more closely reflected the broad majority of public opinion than did the entrenched opposition of the educational professionals, who were being issued with window stickers reading "This time vote for education (meaning vote against the Conservatives) There is no denying the importance of the educational issue Almost immediately after the election the Prime Minister could deem the proposed Education Bill to be "the key to the future the biggest and most important legislation of the forthcoming parliamentary session (*Independent* 17 July 1987)

Developments in Other Countries

At this point it is necessary to make at least some reference to the situation in other comparable countries The above has been written and with rare exceptions the recent educational debate has been conducted, as if it were a UK story with UK causes and UK consequences whereas there is ample evidence that broadly similar situations and shifts in public opinion occurred at about the same time in other countries In the mid 1970s in the wake of the first oil crisis economic recession and the onset of falling school rolls there occurred throughout Europe an apparent loss of confidence in education to execute rapidly those tasks entrusted to it at the time of buoyant budgets and expanding facilities" (Neave, 1987). In the view of a Swedish professor, education suffered from "dwindling legitimacy," i.e. it was no longer regarded as fulfilling its functions in society, not because standards in education were declining (they probably were not), but because the post-war relationship between educational qualifications and sound employment prospects began to break down (Lundgren, 1987). By the time of the Meeting of European Ministers of Education at Helsinki in 1987, "Speaker after speaker is recorded as expressing awareness of the increasingly difficult nature of the teacher's role," and there was "international recognition by policy-makers of the problems educators face at a time when the latter are unfortunately all too often accustomed to a degree of political denigration on the various national scenes" (Hellawell, 1987).

In the USA, too, there was by the early 1980s widespread demand for educational reform. Its essence was captured in the title of the much publicised and debated report of the National Commission on Education, *A Nation at Risk*. In this case, the economic motive was clear. "It was widely speculated that the entire United States workforce had to achieve at a higher rate in order to enhance economic productivity and to render the nation internationally more competitive" (Guthrie and Koppich, 1987). Just as in the UK, education once again came to the forefront of national debate. "After being ignored and left in a policy vacuum, schools have again become subjects of popular and governmental attention" (Bredo, 1987). A prime focus of that attention was a more market orientated approach and the concept of consumer choice (Elmore, 1987). The public perception was of "state and local policy-makers under considerable public pressure to do something about the decline in educational quality" (Chubb and Moe, 1987). Broadly similar criticisms and demands for reform have been the subject of public detate in Canada (Wilkinson, 1986; Premier's Council, 1988).

Although they obviously differed in important respects it is difficult to deny the commonality of the educational reform movements in these various countries.

Unique Reasons for the Demand for Educational Reform in the UK

With reference to the UK, three salient questions arise:

(1) Why and how did it come about that general public perception of the national education had changed so markedly and had come to see the need for major reform?

(2) Why had opinion amongst educational professionals come to differ so sharply from that amongst the public at large?

(3) How far will change go, or are we seeing the *privatisation* of education?

In answer to the first of these questions, there was, as has been indicated above, no single cause. The combination of demographic and financial diminution perhaps led to a questioning of much of what had previously, in a climate of sustained and apparently never-ending expansion, been taken for granted. Mass unemployment of young school leavers and their apparent inability to cope with the situations in which they found themselves focused attention on the preparation for work and for life that they had received at school To an increasing extent the preparation came to be seen as inadequate, at least in the eyes of many parents, if not in the eyes of educational professionals

The professionals were virtually unanimous in resisting calls for major educational change Why? Here we have to cast our minds back to the "secret garden" era, when not only was education seen as the prerogative of the professionals, but external, lay involvement or influence was seen as positively unwelcome and even harmful "The autonomy of schools has been jealously guarded *against* the demands of parents" [italics as in original] (Cullingford, 1984) The White Paper which accompanied the 1944 Act stated that there was no need to include parents on school governing bodies Over the ensuing 30 years or more, teachers, and especially their professional bodies, came more and more to see every aspect of the lives of schools as their own prerogative

If parents felt resentment at the "school which did not encourage parents to venture beyond the gate" (Sallis, 1986), few if any gave expression to such feelings Attitudes were then widely accepted which by the 1980s would not be tolerated

One has to ask whether professional educators had themselves sown the seed of future attitudinal changes towards education, and thus of the eventual major reform proposals, by what may, without exaggerating, be called their isolationist, even ghetto like, attitudes towards the outside world - attitudes which were strongly expressed by some of the opponents of the 1988 Bill (Deem, 1988) If one reads over the educational literature stemming from the "secret garden" era, one has difficulty in finding any well known education professional calling for greater participation in education by, and closer involvement with, the external community

An LEA Chief Education Officer had to admit that the fact that LEAs had been so slow to adapt to "The Age of Participation" had led to their own downfall (Brighouse, 1988) In no other country was the divorce of education from the world of employment and life outside school so pronounced as in the UK And in no other country has the education reform movement led to such drastic changes The hypothesis that emerges is that professional educators were at least partly responsible, during their heyday, of laying the foundations of their own eventual demise

The third question relates to the future If the education reform movement can be seen, in retrospect, to have been gathering momentum for at least 12 years before the coming of the 1988 Act, to where can we envisage it leading? Will the series of recent reforms suffice for a while or will the new decade, to take us up to the twenty first century, see further major changes? In part the answer to this question will lie in the consequences of decisions already taken i e the extent to which schools opt out, how successful schools are in coping with local financial management, how many City Technology Colleges are founded, what the regular testing of children reveals, what will be the ramifications of increased parental roles on governing bodies and increased parental choice of schools All this will give much food for thought over the next decade

More fundamentally, will we see further major administrative or legal changes? It is difficult to doubt that we will, especially if the Conservatives remain in power Whilst no one can foresee in detail what the future may hold, it has been strongly argued that this will be along the lines of privatisation of the education service It is also argued that in a number of important respects, privatisation has already begun to take place (Pring 1988), or that we are seeing "privatisation by stealth" (Demaine, 1989) Competition, consumerism and tendering are all involved They can be seen clearly in the revised (from 1987) arrangements for the in-service training of teachers, under which different institutions bid against each other for the funds available "Curriculum enhancement through private sponsorship" (Pring, 1988) is becoming more common in schools Some schools have some of their teachers' salaries paid by local companies The active marketing of schools is now widely accepted For students in higher education, some form of loan scheme is about to be introduced All of these are examples of the application of market place principles, and they show how Conservative education policy has come to differ significantly from that of the Labour Party Already some competing sixth form colleges (the last two years of secondary school) have to spend much time, energy and money in trying to sell their wares to the 16 year olds in local schools whom they seek to attract as students, whilst those schools with their own sixth forms seek to retain them Presumably in future the new local City Technology College will also enter the competition We may expect many more of such developments

Conclusion

In the 1980s the school reform movement has progressed further and faster in the UK than in any other comparable country, and the reforms have arisen from a complex combination of demographic, economic, social and political factors These factors have been at work in other comparable countries as well, but what seems to make the UK experience unique is the isolation and insularity of the school professionals, in attitude as well as in law, from parents and communities from the late 1940s to the 1980s All of the story recounted in this educological analysis relates to the interaction of schools with their external environments, and it is demonstrative of what can happen in the way of rapid and extensive reforms when school professionals collectively and persistently fail for too long to take heed of the social, economic and political milieux in which schools must function

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An Educology of Policy: The Radical Alternative for Challenging the Assumptions of the White Paper on Higher Education in Australia

Stephen Hay
Griffith University
Mt Gravatt, Queensland, Australia

ABSTRACT

The assumptions underlying the White Paper on Higher Education in Australia (cf. DEET, 1988) are representative of the economic rationalism which has dominated public policy in Australia in recent years. By advocating competitiveness, meritocracy and bureaucratic regulation of privilege, the White Paper is an attempt to reassert the legitimacy of the state, in the context of failing economic strategies and institutional decline. Within the currently dominant public policy paradigm, a crisis of education is declared, and the crisis is defined in terms of the educational system's slow responsiveness to economic considerations of efficiency and productivity. The antithetical position for worthwhile purposes for education is that of cooperative anarchy. It assumes that full human potential can be achieved only through the development of the uniquely human ability to problem solve in holistic rather than atomistic fashion. The ability to perceive the world dialectically is a necessary precondition for holistic development. Higher education implies a process of human development, and it should be recognised that the promotion of dialectical thought is the proper and primary function of higher education.

Introduction

The thesis which will be developed in this educological analysis is that of the importance of holistic thinking. Along the way, there will be an exploration of the usefulness of the holistic paradigm for the organisation of higher education, not just for Queensland, but for higher education throughout Australia.

Two arguments will be developed. The first argument will present reasons which support the proposition that holistic thinking and cooperative anarchy represent viable and desirable alternatives to the business management approach to higher education such as that outlined in the White Paper on Higher Education (Smith, B et al, 1988:13). The second argument will present justification for the holistic paradigm as the most appropriate one for guiding the functioning of higher education The process of higher education is conceptualised as an institution for mature adults involved in the process of open inquiry

Indications will be given of the kind of institution which stems logically from the model of holistic thought which is explicated It will be argued that the function of higher education should firstly be geared to the development of the mature individual by liberalising opportunities for self (ideological) examination in cooperative non-authoritarian ways. Subsequent to this, the university's function should be the development of knowledge in any particular disciplinary field, but only to the point that it serves the first objective Efforts to promote the profile, popularity, professional status or research efficiency of particular disciplines or departments constitute "goals displacement" whereby the discipline no longer serves the development of the individual, but is reified, thus inhibiting the free association of ideas necessary for the realisation of the interconnectedness of knowledge. It is assumed herein that it is only by this latter process that individuals may develop the maturity of thought (self directed, personally meaningful) appropriate to adulthood

Although genuine progression to adulthood and holistic thinking remains totally the responsibility of the individual, it will be argued that the capacity for dialectical thought is a logical precondition of holistic thought and is thus properly the foremost concern of the university, irrespective of its other goals From this perspective, the White Paper on Higher Education will be reviewed as representative of policy embodying the "economic rationalism" of the new right This form of rationalism will be exposed as educationally fallacious and in reality an illusion of state legitimacy in the face of irresolvable economic and structural decline

The Theory

Any prescription for change must necessarily deal with the nature of humankind and importantly, the relationships of human beings to their environment, both natural and socially constructed Greenfield (1976 5), rejecting the positivist notion of reality, argues the case for a phenomenological definition of reality This recognises the social construction of what is real and the social mediation of consequent dispositions to that reality held by individuals Greenfield argues that socially constructed reality is crucial to the gaining of ontological insight He states

> If ... our ideas for understanding the world determine our action within it, then our ideas about the world -- what really exists in it ... how we should behave in it -- are of the utmost importance ... [p 19]

It is the formation of ideas and our understandings of the world that Volosinov (1973) attributes to language and discursive (semantic) practices Diverging from the dominant belief in the primacy of experience in the shaping of consciousness, Volosinov states

> It is not experience that organizes [sic] expression but the other way around expression organizes experience. Expression is what first gives experience its form and specificity of direction [Donald, 1981 59]

Apple (1987), Bernstein (1986), Laclau and Mouffe (1985) and Ogilvie (1988 5) support Greenfield (1976 15) in his argument that organisations are in effect manifestations of collectively defined social reality and in his claim that access to power allows the creation of dominant definitions thereby constructing the experience of others and hence their actions within organisations The process of social formation of the subject might be considered the paradox of anarchy which stresses the primacy of the individual in the process of meaning construction For Ogilvie however such a paradox is transcended by the notions of time (age) or maturity and it represents the delineation between immature thought and adulthood characterised by holistic thinking and a self reflective knowledge of the individual as a conscious participant in a great whole

The model of cooperative anarchy proposed here thus challenges the notion of meritocracy which enshrines access to privilege via arbitrary definitions of what is desirable in terms of acquisition and interpersonal conduct Cooperative anarchy therefore implicitly rejects the elitist hierarchical definitions of reality posited by ideologues from the individualist capitalist right and the institutionalised socialist left Ogilvie (1987) denies the apparent bipolarity of left and right ideologies He argues that both enshrine meritocratic social forms thereby guarding by bureaucratic allegiance privileged and unequal access to power wealth status and knowledge

The claim here is that differences between the political left and right are a matter of form rather than substance The capitalist right which is currently undergoing a resurgence in all western capitalist democracies (Sawer 1982 Himmelstein 1983) bases its ideology firstly upon pursuit of self interest which creates by virtue of Adam Smith's "invisible hand" a common social good Davidson (1987) exposes the economic rationalism of the right its lack of social understanding and its implicit denial of humankind's unique ability to reason understand or introspect on humankind's self interested nature It is the right's artificial separation of economic considerations from the notions of social policy and the right's denial of the moral nature of humankind which has led to the criticisms that ideologies of the right simply act to heighten economic and social inequalities Attacks on the "welfare state" unions and industrial regulation by governments are an attempt to create a sharper differentiation between those with access to economic wealth and those who are reliant upon the capitalist system which protects and supports the position of elites

Castles and Wustenberg (1979) have similarly demonstrated the nature of political power in eastern block countries governed by institutionalised forms of socialism Imposed forms of Marxism instituted by intellectuals in the USSR and its allies have paved the way for the establishment of a managerial elite entry to which is governed by personal subservience to doctrine the party and the state Similarly Marxist prescriptions based on critiques of modern western captalism have rarely seriously threatened the taken for granted hierarchical structures upon which state bureaucracy and state capital maintain power Evolutionary tactics for socialist intervention such as targeting schools entry quotas to higher education positive discrimination promoting equality for women, youth employment schemes and other redistributive measures, have operated on the rather dubious notion of social mobility as the answer to problems of equality and equity for underprivileged or underrepresented classes.

The fallacies inherent in this understanding is that 'equality' can be construed in terms of equal access to positions of power, either economic or political. The fallacies of social mobility theory have been ably analysed by Bowles and Gintis (1976), Althusser (1971) and Young (1971): the inescapable fact is that promotion of individuals on the basis of merit to restricted power positions necessarily means denial to others. The social mobility argument is therefore ideologically conservative because, by definition, systems of promotion preclude any radical critique of the system itself. As an example, Apple (1987) has noted the incorporation of the Black movement in the United States. The movement has been institutionalised as another movement in the same system, reinforcing the ideologies of the existing meritocracy and thus denying the radical intent with which it began. It is a dubious notion that a system (social, political or economic) may be radically altered by changing the personnel at the controlling levels where those individuals have been promoted by the dictates of that system.

It is a reasonable conclusion therefore that the above political ideologies stand opposed to the antithetical position of cooperative anarchy.

To comprehend the radical alternative, we must first grasp the fundamental principles of thought and action which are foundational to cooperative anarchy. This Ogilvie has referred to as holistic thinking. Holistic thinking informs many of the alternative positions which confront the status quo - a status quo which threatens to collapse due to its own unmanageability.

I will begin from the assumption that the genuine problematic of human existence is for humankind to come to terms with its reason for being on earth. The only genuinely proper education is the process which is concerned with the full development of the uniquely human faculty to think, reason and act on knowledge which humankind has attained individually or cooperatively. As Schumacher (1978:27) has pointed out, only humankind displays self awareness or the ability to introspect. Therefore, an education which rejects this is denying the development of the full potential of human beings and thus limits the evolutionary potential of humankind. At this point it is clear that life for some individuals is unprobelematic as they have not yet reached, for one reason or another, the level of maturity necessary to ask these higher order questions, the answers to which might lead to a rich, wholesome and diverse existence. Reasons for the neglect of these questions are many, including immaturity, fear, retardation and elective ignorance. As for immaturity, young people with limited experience of the world and older people with limited understandings of the world cannot be expected to reach this level. As for fear, questions which involve self knowledge and knowledge of self determination, as Fromm (1984) notes, cause discomfort for ideologically insulated individuals.

Perhaps the most insidious and pervasive reason for the nonattainment of this desirable level of thought is the hegemonic nature of consumerist ideologies. Consumerist ideologies attempt to persuade the public that self actualisation can be achieved by the accumulation of material possessions. As Marx and contemporary thinkers have noted, the ruling class have been able to assert their dominance with both repressive force, organised by the state, and later through hegemonic domination through ideological state apparatuses, such as schools, the law, the family and institutionalised religious forms (Althusser, 1971). Lasch (1986) has pointed out that capital has been able to maintain this dominant position through the media as the concept of the social shifts from a local, provincial or national level to a world community. This is supported by Trainer (1987), who indicates that world economies are dominated by the notion of exchange value over that of use value. It is the dominant capitalist belief that production should serve exchange value and therefore profit. This denies the alternative of sustainable, low energy, cooperative, community based economy, which values personal development, diversity and cooperative enterprise over dependent, ideologically manipulated conformity.

The exposure of this position represents the greatest danger to capitalist interests, which invest millions in advertising and symbolic manipulation in an attempt to hold together the myth. It is clearly in their best interest to maintain a uniform ideology of commodity fetishism as it denies the alternative of self determination by individuals in cooperative interdependence. This ultimately threatens to depose the capitalists and experts, upon whom they rely for their legitimacy, not by violence, but through obsolescence, which will come via the radical alternative.

The radical alternative is holistic thought. It aspires to integrate metaphysical beliefs (beliefs about god or the universe), physical or mundane theories and social theories into one articulate, internally consistant role. This role can be conceptualised as the outward manifestation of all our theories into one internally consistent ideology (see Figure 1).

It is not difficult to see why this model of human existence is directly confrontational to the capitalist monolith as it is antithetical to the conformity upon which consumerism operates. This is because commodity fetishism (self definition determined by the status value of one's possessions) is inconsistent with human development. Commodity fetishism denies self determination. It is therefore immature, despite the beliefs of the intellectually crippled or those who have something to gain by promoting those beliefs. In short, the alternative is the formula for diversity from which individuals may legitimately express themselves through the arts, meaningful creative work, mutual aid, relaxation, music or all of the above. Interestingly, it is this form of thinking which informs movements including Green politics (Hutton, 1987), the conservation movement, the peace movement and Aboriginal land rights movement. All of these movements are at the forefront of oppostion to current hierarchical paradigms within Australia. These organisations, through passive resistance, seek a genuine personal education and therefore a genuine freedom.

Anarchy which is informed by the above processes therefore i

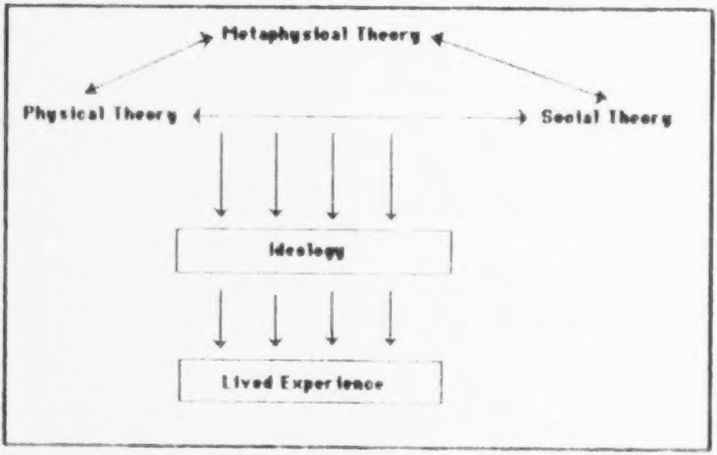

Figure 1 Holistic Thought, Ideology and Lived Experience

opposed to meritocracy of the political left or right in that the individual represents the basic social unit. The individual therefore should not be arbitrarily subjected to demotion by institutions including the family, the state, universities, colleges or anything else which claims to be acting in one's better interest.

At this point, it is useful to explain the differences between the cooperative anarchist definition of individual self interest, as opposed to that of the conservative right. New right individualism cannot withstand the justifiable critique that the individual is of secondary importance to one particular system, that of corporate capitalism. Such a system is therefore reified, and it serves the interests of the capitalist class, especially finance capital.

The cooperative anarchist, on the other hand, in the knowledge of self interest and humanity, maintains as a basis for behaviour a clear understanding of the individuality and therefore the humaneness of others. This is the point of philosophical divergence with arguments from the right. While the individual is primary, self interest may not be. The notion of the individual carries with it the necessary recognition of the individuality of others. This however does not infer subservience to institutionalised ideologies, but maintains that knowing individuals first ought to act in consideration of the outcomes of their actions and how these may affect the personal freedom of others. In doing this, they ought to reject the values inculcated by bureaucratic elites which support the very notion of meritocracy. Meritocracy, Greenfield and Ogilvie maintain, necessarily implies the primacy of the values of competition over cooperation materialism over individual creativity compartmentalised thought over holistic thought, professional privilege over collective understanding and commodity fetishism over interpersonal relationships

Legitimate Authority

Authority is not antithetical to the cooperative anarchist position It is argued however that bureaucratic insistence on conformity is an unnecessary curtailment of individual freedom However, part of the freedom of the individual is a willingness to associate freely as part of a group which one believes may enhance one personally or assist one in the appropriate development of one's perceived role (self) Association or organisation seen in the anarchist tradition, therefore is not inhibiting but rather, personally freeing and self enhancing Recognising a need for structure among individuals freely associating for a particular goal the anarchist may delegate authority to an elected equal who perceives it as a proper role to serve the needs of other members of the group to meet a collectively defined end, rather than the ends of the structure itself As Greenfield points out however, existence of structure does not in any way replace the individual's right (and responsibility) for self determination Dereifying the institution therefore means an understanding that the structure exists in so far as it serves personal growth needs and nothing else Anarchists thus commit themselves fully to their role in the institution as it fulfills that need What is implicitly rejected is the deauthorisation of acts carried out as the function of the rules or demands of the institution As these do not lead another to personal fulfilment they typify the bureaucracy and hierarchy rather than the anarchic organisation

The Resolution of Conflict:
Consensus Versus Management

Relevant to this argument are two major theoretical positions in administration, which have been outlined by Riffel (1978) In terms of subjectivity the positions view the construction of authority and organisation in very different ways One position is that of the structural functional perspective, typified by the theory of Talcott Parsons and summarised in MacGregor's Theory X of administration The other is that of the Marxist and phenomenological perspectives

Correctly Riffel indicates that the structural functional version postulates an overly integrated view of society and presents a cynical overly socialised (controlled) view of human potential In this understanding, good administration is measured by the absence of conflict or difference Any dissent arising is recognised as an abberration of the system, not as a function of the system itself Marxian conflict models operate upon notions of domination, whether it be management over workers, lecturers over students or the proletariat over the bourgeoisie The outcomes of decisions are two fold in that one group or individual dominates the other by coercion, threat or majority rule Alternatively the responsibility for the decision is delegated to an arbitor thus absolving responsibility of either group to the other

The cooperative anarchy which is being proposed here does not do away with notions of interpersonal conflict (here read as individual difference or liberalism) however it does reject many of the popular Marxist conflict models of society The difference lies in the resolution of those conflicts

The radical alternative posed by cooperative anarchy hinges upon conflict resolution between equals on a nonthreatening nonauthoritarian basis respectful of the personality of each member who has a stake in the outcome of the decision This process can be legitimately called consensus and it requires several understandings on the part of participating individuals These include an ability to know oneself or introspect on one's own motivations and values It also requires the ability to have empathy and respect for the individuality and interests of other parties involved in the decision Finally what is required is the personal disposition to render service and mutual aid which are appropriate to a cooperative anarchy Arguably possession of these qualities by all parties concerned would overcome much of the factionalism and professional pride which informs many of the stands and irresolvable positions taken by bureaucrats specialists and managers in our factionalised and compartmentalised society

Lastly consensus is antithetical to compromise The difference between compromise and authoritarian domination is one of degree Both involve an unnecessary forfeit of individual freedom if the compromise is of large enough proportion to threaten one's understanding of that freedom There are thus two outcomes for anarchists One is conflict resolution consistent with their values and beliefs The other is provision for disassociation stemming from a condition whereby continued association would no longer serve self actualisation needs of the individual

The theoretical position of problem solving is underpinned by notions of adulthood and mature thought postulated earlier It rejects the immature assumption that authority is essential for the control of relationships among adult human beings (Ogilvie 1988a 72)

The holistic paradigm represents the emergence of an antithetical position at this historical moment to that of state managed capitalism whether socialist or liberal democratic It appears that the emerging paradigm is being mediated in general by several concurrent crises on a world scale and by revolutions particularly in information technology which are altering social conditions in capitalist countries Several authors including Elgin (1981) Bundy (1976) and Trainer (1985) have noted that the industrial paradigm is under threat Problems of pollution over population insufficient energy supply and over bureaucratisation are set to force a resolution of the crisis in one of two ways Elgin recognises the two possible scenarios revitalisation or stagnation Stagnation may legitimately be seen as an attempt to reinforce and refine known systems of control especially hierarchically ordered systems of organisation Revitalisation on the other hand may be seen as the emergence of the alternative paradigm of cooperative anarchy

Perhaps most indicative of impending decline is the crisis in western capitalism. Western capitalism exemplifies bureaucratic control evolved to its highest form or to its optimal stage of refinement. Wexler and Grabiner (1986) have argued that the paradigm has been under threat since the 1970's. They argue that the decade of the 1970's was a period of unprecedented social change whereby social systems responded to the faltering welfare state as it expanded beyond its ability to meet equity demands. The struggle for the state to maintain its legitimacy in the face of rising unemployment and inflation levels has continued into the 1980's in a resolution which Panitch refers to as corporatism:

> [corporatism operates] ... as a political structure within advanced capitalism which integrate organized [sic] socio economic producer groups through a system of representation and cooperative mutual interaction at the leadership level and of mobilization [sic] and social control at the mass level. [In Wexler and Grabiner, 1986:15]

As the corporatist option involves active exclusion of the majority from the process of decision making, it can reasonably be assumed that the condition is transient and simply an attempt to assert dominance under conditions in which domination is inappropriate and unsustainable. These conditions, Wexler (1987) has identified, exist in relation to the amount of available information technology which may provide a democratising moment, as knowledge and symbolic meaning expand beyond the ability to individuals or hierarchies to control. Similarly Pusic (1969) has noted the increase in specialisation which has grown to such an extent that it is structurally inefficient to control through normal managerial procedures.

The White Paper on Higher Education: Reasserting the Declining Thesis

The White Paper (DEET 1988) can be conceptualised as simply one part of the overall structural decline described above. Important to the struggle for state legitimacy, however, is an attempt to redefine the meaning of useful knowledge in terms meaningful to the reassertion of state managed capitalism. This Moore (1987) refers to as the "new vocationalism". The new vocationalism attempts to cut off opposite definitions of the crisis and invents the necessity for a concerted utilitarian approach to education.

Higher education in Australia might be seen to be under attack from several directions as indicated in the White Paper on Higher Education. These include:

(1) increased centralisation and bureaucratisation of decision making in higher education by amalgamations and institution profiles,

(2) standardisation of courses in line with economic and national objectives,

(3) competitive funding based upon selective expansion in areas promoting national economic and social goals,

(4) closer administrative links with industry and attacks upon the conditions and job security (including tenure) of academic positions within educational institutions.

The success of all consequent measures which promote the ideological restructuring of higher education is reliant upon centralisation of decision making processes. Throughout the White Paper the legitimisation of centralised decision making processes is created through discourses of tautology (cf Donald, 1979), which aim to define the current restructuring as an attempt to free institutions from unnecessary government control and liberalise the functioning of the university The official discourse is however internally contradictory

> The provision of funds under the agreement will carry with it an obligation by the institutions [of higher education] to give due regard to national priorities and to the objectives of improved efficiency and effectiveness. [DEET, 1988:30]
>
> institutions are free to manage their own resources without unnecessary intervention, while at the same time remaining clearly accountable for their decisions and actions The system of educational profiles will be an important instrument for this purpose [DEET, 1988 10]
>
> Consistent with the government's objective of excellence in higher education, measures will be implemented to encourage institutions to be efficient, flexible and responsive to changing national needs [DEET, 1988:10]

It is clear that the resurgence of free market economism and pressure upon governments to confront the crisis in employment, standards of living and balance of payments have reworked the ideological and discursive terrain of education to redefine equality as equality of opportunity in free competition, efficiency with productivity and effectiveness in terms of student outputs I would suggest that the current educational crisis represents far more than a rally for credentialling, which has been dominant in education in Australia in the last decade It represents a threat to the very nature of what may be considered valuable knowledge, especially the funds of knowledge of philosophy, sociology, history, educology and the arts This must indeed threaten the traditional and vital function of the university as a socially critical institution as it becomes incorporated into mainstream functions of supplying graduates for a stratified labour market The progressive incorporation of critical funds of knowledge can be recognised in the following extracts dealing with the perceived role of humanities and the arts

> .. technical skills are not the only skills required for the future development of our economy .. employers and industry groups have attested to the value they place on graduates with a broad educational foundation and with well developed conceptual, analytical and communication skills The general problem solving skills of enquiry [sic], analysis and synthesis are essential to the building of a flexible, versatile workforce able to cope with rapidly changing technology [DEET, 1988 9]
>
> [The government] acknowledges the relevance of all disciplines to our current economic circumstances, for example, our economic future as a nation will depend not only on what we have to sell overseas but how effectively we sell our products [DEET, 1988 8]

The redefinition is all important, as Volosinov has pointed out, in that our reality is determined by the meanings that we bring to bear on experience through language It can only be assumed therefore that the humanities will be degraded in the public eye as they are defined as marginally productive and at best auxiliary to knowledge which promotes economic productiveness efficiency and competitiveness This belief is reflected in the attitude to expansion in higher education

> Priority in the allocation of additional intakes will be directed to areas of strong demand from students and industry, having regard to the likely future needs of the economy and labour market The government will continue to give high priority ... to the fields of engineering, science and technology and business and management studies [DEET, 1988 17]

Finally administration to effect the changes to higher education is seen and defined as a process of management The effective tertiary institution in the White Paper is defined in an antithetical manner to that of the collegial organisation of scholars referred to previously The managerial structures here ensure allegiance (and funding) to an ideology which values compartmentalised knowledge over personal growth and development The structures also protect professional privilege and industrial privilege over diversity, self determination and dissent

The bureaucratic hierarchical model of organisation development is exemplified in the following After establishing the pending crisis in education the White Paper states

> Effective management at the institutional level will be the key to achieving many of the government's objectives for a unified national system managers are required to exhibit high level management skills and to show strong leadership skills in meeting the institution's corporate goals [DEET 1988 101 102]

With reference to governing bodies of institutions the White Paper states

> such bodies operate most effectively where their roles and responsibilities are clearly defined in relation to those of senior management and where managers are held accountable for their actions [DEET 1988 102]

The White Paper presents a discourse of necessary self sacrifice and submission to group ideologies and objectives Notwithstanding the dubious relationships assumed between graduate rates education employment and Gross Domestic Product (criticised by Smith et al 1988) the White Paper clearly defines the institution in terms of the factory The factory operates on the assumption of individual inequality in which lower level operaters are controlled by individuals who possess higher level knowledge of the process of production (Pusic 1969 5)

The Administration of Higher Education

Tertiary education should enable and empower individuals to perform their roles in terms of a paradigm and the best choice among competing paradigms is that of cooperative anarchy In terms of cooperative anarchy the foremost responsibility of the university is the promotion of human development Within the paradigm of cooperative anarchy human development is defined not by scientific or technological progress which is the lure of the current rationalisation process in the White Paper on Higher Education Rather human development is defined by the development of human thought to the level of adult maturity This includes the ability to solve problems imaginatively and ecclectically

My argument is that this process including the mature use of disciplinary knowledge firstly depends upon the development of dialectical thought which I see as a necessary precursor to holistic thought

One way to come to understand dialectical thought is to consider what it is not Dialectical thought can be thought of as opposite to that of linear thought The linear, disciplinary mode, as exemplified in the classification of the forms of knowledge by R S Peters, is compartmentalised, narrow, inflexible, authoritarian, elitist and meritocractic It promotes uncommon privilege among the recognised masters of abstract knowledge Linear thought characterises much of our scholarship and underpins much of the mundane, highly rationalised and standardised actions in the universities and colleges of advanced education

Dialectical thought is the radical alternative, and it is the necessary requirement for realisation of the adult condition It is adaptive, critical, liberal, accommodating, reflective, aware and open Above all, dialectical thought is antithetical to the dominant disciplinary modes of thinking about the world and about problem solving Its importance is in the potential for humans to be aware of their forms of experiencing consciousness by examining an antithetical position In other words, realising what *is* by coming to an understanding and recognition of what is *not* (Ogilvie, 1987:3)

Consciousness and reality can be understood in terms of what is not Only this understanding makes possible the realisation of alternatives thereby eliminating the potential for manipulation

This point may take on religious significance when it is realised that the sum total of potentialities (that which has not been thought or experienced) comprises the totality of existence which Ogilvie (1987:3) has reasonably referred to as god

It is in developing within the individual the capacity for, and the acceptance of, dialectical thought which should be the chief concern of the modern university This development must pave the way for true democratisation of society by a process of self rule (not self indulgence)

If society is to develop to a higher level what is required is the often painful process of self knowledge It is only by a rebirthing of the intellect that we might emerge from the skirt of our protective ideologies, whether they emanate from political masters who extol the logic of fearing the Russians, technocrats who espouse the virtues of artifacts from the bomb to the latest computer game or from academics who profess the latest theoretical knowledge as though it were truth

The kind of person which may emerge from such an education would be empathetic and capable of self determination, but with the knowledge that personal growth is dependent upon interpersonal cooperation and interaction Marx, who was such a thinker, enjoyed the knowledge that "we ought to question everything" This dispostion is not, as some managers imagine it to be, a prescription for confused inaction which comes from protracted argument between immature thinkers Rather, is a way of experiencing the world dialectically

Unlike holistic thinking, dialectical thought can be learned and readily experienced It is therefore the preceding level to holistic thought As holistic thought may only be experienced by people with wide experience, it is reasonable to assure that the university give exposure to as many areas of knowledge as possible in its education programs Importantly however, the disciplines for the dialectical thinker must remain informative rather than dogmatic

The Organic University

Habermas (1971) argues that the purpose of the university is to transmit technically exploitable knowledge, transmit, interpret and develop the cultural traditions of society for self understanding and to promote the political consciousness of its students. Habermas sees the democratisation of the university as not so much governed by the dictates of vocationalism and professional status development, which is fundamental to the discourse of the White Paper, but rather as residing in the operation of the institution through its working structure. Habermas resolves the democratising role of the university with the role of knowledge production and transmission, the university's primary function.

As univerisiy disciplines operate upon the basis of critical reasoning in the selection of methodology, subject choice and other research criteria, so to do problems of political or moral nature. Reasoned choices of an academic nature therefore proceed along the same channels of logic and justification as do those problems of what should be done or what *should be* over *what is*.

Here Habermas draws upon two conditions of the university. One is the sensible human approach to the procedure of scientific inquiry, which is tentative, not dogmatic. Secondly, Habermas indicates that principles which inform academic freedom necessarily precede the conditions of operation of the university as a genuinely democratic (collegial) institution within society. Habermas is worth quoting at length on this point.

> Here the principle of public discourse is supposed to eliminate all force other than that of the better argument, and majority decisions are held to be only a substitute for the uncompelled consensus that would finally result if discussion did not always have to be broken off owing to the need for a decision. The principle, that ... only reason should have force, links the democratic forms of political decision making with the type of discussion to which the sciences owe their progress. [p. 7]

This understanding is expressed by Ogilvie (1988a 79) in reference to the actual process of decision making in the collegial institution. What is required in the administration of education, it would appear, is a clear differentiation among *policy discussion*, concerning rules and guidelines of the institution, *expressive decision making*, which occurs amongst groups of people of similar role set (e.g. at deparment level) and *administration*, or carrying out of all decisions arising from any of the above discussions.

This requires an overturning of our current understanding of administration in higher education, which is managerial and authoritarian and therefore neglects the educative potential of the first two steps for the sake of expedience in the last.

Conclusion

An attempt has been made to demonstrate how organisational development may proceed along the lines of self actualisation and personal growth by demonstrating the compatability between organisational goals and the holistic paradigm in the context of higher education. This is similar to Kiefer and Stroh's (1983) vision of effective organisational structures in which variables of purpose, vision, alignment, personal power, results, system structure and intuition, supercede the traditional problem solving approach of linear bureaucratic organisations. The important understanding for participants in higher education and other institutions at present is the emerging antithetical paradigm of holistic thought and cooperative anarchy. The primary concern therefore for theories of organisation development is that the institution be geared towards personal education consistent with the emerging synthesis. It is my belief that the industrial capitalist paradigm has run its course. It stands at a point where further resolution within the declining paradigm structure must only lead to stagnation, decline and complete disfunction.

I have argued that the current resurgence of conservative discourse signals a system in its final stages of decline. It is a matter of common understanding, therefore, that the only other alternative is the radical one which constructs notions of power around understandings of human equality, cooperation, mutual aid, consensus and legitimate authority, instead of domination, superordination and subordination, coercion and arbitrary inequality.

Only the former conditions, conceptualised by Kropotkin as mutual aid, might lead humankind to higher stages of evolution in the development of uniquely human potential, self awareness and self knowledge. Proponents of the capitalist right or state socialist left, or any other collectivist, externally imposed ideology, might regard the proposals herein as arrogant, pompous or self righteous or as an attempt by another ideologue to usher in a new order by which those of a like mind may have something to gain. To arrive at such an understanding is to misunderstand the genuinely radical nature of the alternative way of being. There is nothing threatening in a proposal which espouses self determination and cooperative enterprise, except to those who are not mature enough to accept the concomitant responsibility or those whose privilege is jeopardised by the possibility.

Finally, the ultimate consideration of any ideological proposal (or organisational decision) is that of freedom and whether adherents will experience more or less freedom. It is above all argued that freedom by acquisition is impossible, and our normally economic ideologies need to be expanded or enlightened to reestablish the authentic, as opposed to the ideologically constructed, notions of freedom. Those who think that the quality of life is enhanced by the pursuit of economic superiority at the expense of personal growth might wonder at the capitalist who lives in fear of the revolution and strives to stabilise an extremely unstable empire, or the state socialist who lives in envy of the capitalist and awaits the moment when freedom is achieved through a more equitable share of the economic cake. The anarchist on the other hand, knows genuine freedom. Anarchists know themselves and the potential of others of a like mind and therefore do not have to waste their precious time.

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Educology:
A Case of Mistaken Identity

Gerald L. Johnston
University of Tasmania
Hobart, Tasmania, Australia

ABSTRACT

During the 20th century, and especially in the postwar era, studies about the educational process have strayed from their proper focus. In the foundations of education, administration studies and even studies of teaching, the focus has been on matters other than the mainstream of the educational process. Where much educological theorising has gone adrift is in assuming that the character of the content which is being taught and studied can be ignored in arriving at educological prescriptions. That is, the study of teaching and learning has often become more abstracted than the power of the conceptualisation and the associated generalisations warrants. What is needed is more study of alternative modes of organising content for alternative student populations. Such study must be undertaken experimentally, through presentation to student groups of trial curricular prescriptions, not tested merely in the minds of educological theorists. Selecting valued subject matter from the various bodies of knowledge, organising this into units of appropriate size, arranging these in optimal sequences, motivating student interest in the learning, reinforcing their achievement in it and adjusting all of this for teachers and learners of varying aptitudes and abilities are clearly undertakings of great scope requiring considerable expertise as well as experience. The central objective of educology is properly the more effective and efficient teaching and learning of valued knowledge and skills. The more directly courses in educology are geared to that objective, the stronger will be the identity of educology.

1. Origins

Commitment to the establishment of educology as a distinct body of knowledge can be seen as originating in the Age of Enlightenment and especially in the Enlightenment's faith in the power of reason and experimentation to explain the human condition. Rousseau's Emile (1762) and Pestalozzi's Leonard and Gertrude (1781) were to acquire their knowledge through experience of a sequence of sense impressions structured by their tutor from the more simple to the more complex The goal was to prepare the student for informed responses to whatever new stimuli were encountered This structuring was made more explict by Pestalozzi, who believed that mental development proceeded according to natural law and that the method of teaching was to be in tune with that in order to ensure a harmonious development of the several faculties of the mind No longer was the older and simpler method of learning based upon authority, requiring merely memorisation and recitation and epitomised in the catechism, a sufficient guide Provision for the stage of development of the learner and for the diversity and uncertainty of sense impressions made much greater demands on the teacher and necessitated the provision of specialised training in a new body of knowledge (i e educology), to become known by various names, e g Education, Educational Studies, Professional Education, Teacher Education, Pedagogy, Psychopedagogy, Andragogy, Ethology

In the 19th century, the formalisation of this new fund of applied knowledge was perhaps chiefly influenced by the German philosopher, Herbart, whose text, *Universal Pedagogy*, was first published in German in 1806 His purpose was to constitute a complete theory about education incorporating an appropriate ethical purpose, a fundamental pscyhology of learning and a comprehensive method of teaching Translated into English in 1892 as the *Science of Education* Herbart's work was to exert a profound influence on teacher education in the United States, the United Kingdom and Australia

In the United States,

> The Herbartian wave of the nineties resembled the Pestalozzian enthusiasm of the sixties. Each for a time furnished the new ideas in education, each introduced elements of importance into the elementary school instruction, each deeply influenced the training of teachers in normal schools [Cubberley, 1922:423]

At the same time, John Adams, to become in 1902 the first Professor of Education at the University of London, published *The Herbartian Psychology Applied to Education* (1897) A little later, in Australia, Peter Board, the eminent Director of Education for New South Wales, prescribed Herbart "... to introduce teachers to a more professional level of thinking in education" (Hill, 197[illegible]:78).

Herbart's systematic treatise was clearly a decisive influence in the launching of education as a distinct and specialised field for study This influence was sponsored by the claim of scientific status for his theory, a claim echoed in 1879 by Alexander Bain, a Scottish associationist psychologist Whilst this belief probably assisted the acceptance of the new field, it has not been subsequently sustained

> It is now more than one hundred years since Alexander Bain published *Education as a Science*. Since then, less and less has been heard of this claim The most striking aspect of current thinking and discussion about education is its eclectic character, reflecting deep confusion of thought, and of aims and purposes relating to learning and teaching -- to pedagogy [Simon, 1985:77]

In the following sections some of the sources of that "deep confusion of thought" will be examined and, to conclude, a prescription more conducive to distinctive identity and to more effective achievement for educology will be suggested.

2. Foundation Studies

The term *Foundation Studies in Education* was not widely coined for what was called the philosophical, psychological, sociological, historical etc. perspectives about the educational process until after 1945, when each of these became more specialised components of educology. Earlier it had been more common to speak of *Educational Theory* and incorporate, with varying degrees of integration, elements mainly from philosophy and psychology. This was the example set by Herbart, who though a Professor of Philosophy, gave considerable attention in his work about education to his psychological theory, with the concepts of *apperception, many-sided interest* and *cultural epochs*.

Not surprisingly, then, his English interpreter, John Adams, adopted a similar eclectic approach in his *Modern Developments in Educational Practice* (1922), as did his successor to the London Professorship, Percy Nunn, in *Education: Its Data and First Principles* (1920).

In the United States, the Herbartian influence might be seen to have effected a similar though not identical outcome. At Harvard, from its introduction in 1892 until 1899, educology was located within the Division of Philosophy and identified with the title, *History and Art of Teaching* (Powell, 1980:38). There was of course some division of labour in the presentation of courses. The psychological theme was for some time taken by William James, whose psychological theory though was not too divorced from his pragmatist philosophy. The powerful influence on American educological theory of John Dewey might have led to at least a temporary ascendancy for the philosophical perspective, but an experimentalist, measurement oriented psychological educology became, early in this century, a prominent component of educology, under the leadership of Edward L. Thorndike. Freudian theory, too, exercised a growing influence, especially in the training of teachers of younger children. In the United Kingdom, both Adams and Nunn acknowledged the importance of this body of psychoanalytic thought and the example and writing of Susan Isaacs exercised a considerable Freudian influence.

It was not until later in the century that sociology of education (i.e. sociological educology) was given an equivalent place with the other two foundations studies (philosophical educology and psychological educology, commonly called *philosophy of education* and *psychology of education*). This probably was because of the comparatively later development of the parent discipline of sociology. The third of the London line of Professors of Education, Fred Clarke, opened his *Education and Social Change* (1940) with the sweeping claim, apparently quoted with approval:

> One of the profoundest and most acute of contemporary students of modern society has given expression to the view that "no educational activity or research is adequate in the present stage of consciousness unless it is conceived in terms of a sociology of education. [p. 1]

He defined the "purpose" of the book as being to identify those "social realities" which had conditioned educological "thought and practice." The means he proposed was, "... to accept unreservedly what may be called the sociological standpoint and to exhibit its concrete application to the field of English education" (p 1) Exhibiting some of that eclecticism characteristic of his two predecessors, his own approach was not in the mainstream of sociology It has been suggested that

> the main after effects of his work have been to stimulate and reinforce the claim of sociology to a place in the field of studies covered by education. [Curtis and Boultwood, 1960 267] [Curtis and Boultwood are using the term *education* here in the sense of *educology*.]

Certainly the London Institute subsequently led the way in the United Kingdom in the application of sociological ideas and methods to educological questions The social structural and mobility studies of Floud and Halsey set the fashion for the dominant mode in sociology of educaion courses (i e sociological educology) until the early 1970s

In the United States, too, sociology was seen as a central foundations study for educology in the early post-war period The President of Harvard, James Conant, was led to this conclusion by works such as Lloyd Warner's 1946 publication, *Who Shall be Educated?* (Powell, 1980 234) He believed that such studies could enhance the use of educology for the achievement of greater social mobility.

By the end of the 1940s, the foundation studies of educology were ready for their more specialised phase of development Courses in educological theory (called *educational theory*) were no longer seen as appropriate Separate studies in the philosophy, psychology and sociology of education (i e in philosophical, psychological and sociological educology) increasingly became the norm, and because they were now offered separately, they often constituted the largest part of educology within the universities' teacher education programs The trend was for courses in each to look more like the courses of the parent disciplines from which they were derived Increasingly the reference works were by those who were eminent in the foundation discipline or if employed in educology esteemed for their parent discipline achievement Parsons, Peters, Scheffler, Bernstein, Berger, Skinner, Piaget and Bruner became some of the focal reference points Who were the educologists of comparable stature? Through the 1950s and 60s, much of the teaching of educology and the great preponderance of the research was derived from or modelled upon the writing in these specialist foundation fields, i e philosophical, psychological and sociological educology

This ascendancy of the foundations studies began to wane in the 1970s until today their continued existence is under threat in many university courses Why did they prove such insecure supports for educology? Probably the chief reason is that it became apparent that they did not, despite the generic title, provide a *foundation* for the practice of teaching and learning That they could not do so was eloquently expressed in William James oft-quoted distinction between psychology and teaching

> I say moreover that you make a great, a very great mistake, if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite programmes and schemes and methods of instruction for immediate schoolroom use Psychology is a science, and teaching an art; and sciences never generate arts directly out of themselves An intermediary

> inventive mind must make the application, by using its originality .... A science only lays down lines within which the rules of the art must fall, laws which the follower of the art must not transgress; but what particular thing he shall positively do within those lines is left exclusively to his own genius. One genius will do his work well and succeed in one way, while another succeeds as well quite differently; yet neither will transgress the lines. [1932:7-8]

On this view, there is clearly a case for students of educology to be aware of the psychological and sociological constraints upon teaching and learning, but the study of the "lines" is to provide understanding of what *cannot* be achieved, that is what the necessary parameters are for effective educational practice. The lines of psychology or sociology are not directly translatable into educological "rules" as the term *foundations* suggests they might be.

This incapacity to translate foundation disciplines into educological terms without some distinctive "intermediary" invention is not only due to the distinction between pure and applied studies, though that does hold. It is also because the conceptual and methodological store of the foundation disciplines does not include all those concepts and methods necessary to educological understanding. That shortcoming was identified by Hardie in providing an affirmative answer to his rhetorical question, "Does education stand on its foundations" (1969):

> If education is to be reducible, in the strong sense, to the social sciences, or (to put it the other way) if the social sciences are to provide, in the strong sense, the foundations of education, then it must be possible to derive the laws or generalizations of education from those of the social sciences. We might expect, therefore, that books or articles on the foundations of education would take as many generalizations of education as possible, and attempt to show how they could be derived. But I do not know of any work dealing with the foundations of education which proceeds along such lines. Moreover, once the problem is posed in this way, the whole project looks a bit unlikely. [Hardie here is using the term *education* in the sense of *educology* -- the fund of knowledge about the educational process.] [p. 6]

If this is so, then the predominant concern with foundation studies in courses of educology (commonly called *Foundations of Education*) was misplaced, and it led to the sponsoring of a mistaken identity for it as a field of study and practice.

This view appeared not generally to be shared by Peters, who argued for the use of interdisciplinary resources for the solution of educational problems. These resources or "contributing foundation disciplines" he listed as philosophy, psychology, history and sociology (1977:168). However later in the same work he acknowledged some doubts about the efficacy of such a prescription:

> ... because it became appreciated that educational problems required differentiated forms of thinking for their solution, it was assumed that education [i.e. educology] as a subject should be taught mainly by training people in the relevant disciplines in isolation from each other. The students, it was often said, will make their own "integration" of what they have learnt in the contributing disciplines. But how many have in fact done so? [pp. 169-170]

What is not acknowledged is that such integration requires both James' inventive genius, which is something apart from knowledge of a foundation discipline, and a conceptual and methodological store, the contents of which are separate and distinguishable from those of the "foundation disciplines," as Hardie affirmed. A convincing and valid identity for educology can only be established when those distinctive ideas, beliefs and methods become the core of educology as a fund of knowledge and application.

It was probably in the search for such a core of knowledge that curriculum theory rose to prominence as the foundation studies declined in stature, giving rise to Peters' derogatory assessment in 1977:

> "Curriculum" is now, of course, the with-it concept that tends to be stuck like a label on many band-wagons in spite of the obscurity surrounding what is covered by the term "curriculum."

This was but the first of the "abstract methodologies" to aspire in recent years to define educology.

3. Abstract Methodologies

Writing in *Research and Reform in Teacher Education* in 1977, the then Director of the London Institute, William Taylor, observed:

> ... the model that has held sway over the past dozen years or so, and which in its stress on the contributory disciplines owed a good deal to the recruitment in the Sixties to the colleges and departments of numbers of young staff qualified in sociology, philosophy and psychology, is beginning to show signs of wear. Assumptions about the nature of theory and practice alleged to be intrinsic to that model are criticized with increasing frequency and force. (1978:116)

In the ensuing decade, the "signs of wear" have been made apparent by the substitution for specialist foundations studies in preservice educology courses of more integrated, problems centred programs, whilst at the inservice, postgraduate course level the fall in enrolments in foundation discipline based courses has been matched by the rapid rise in course numbers in curriculum, administration and, most recently, teaching studies.

Unlike the foundation discipline studies, these later fields lack a historically authenticated structure of concepts, generalisations and methods, so that they have a greater potential to be "made" by their proponents, but they might be seen to lack, as yet, at least, any guarantee of a significant return in terms of specialist knowledge capable of providing educological understanding which transcends the comprehension available from the application of commonsense.

Whilst the titles of these fields, *curriculum, administration* and *teaching*, suggest a concern with effective educational prescription and application, a common characteristic is the high level of generality of their deliberations, presumably occasioned by the desire to establish general principles which can guide educational practice in a reasonably broad range of circumstances. That purpose has led them to expound their theoretical accounts in a relatively content free manner. This content transcendence is intended to be conveyed by the designation, "abstract methodologies."

(i) Curriculum Studies

Curriculum studies, as a separate subject area in educology, rose in status in the late 1970s as the foundation studies fell from favour and it achieved a prominent place in both teaching and research. Certainly concern with curricular constituents goes back to at least ancient Greek times. In Athens there was the preoccupation with curricular means to a "sound mind in a sound body." Later, in the Hellenistic era an intellectual balance was sought through prescription of the Seven Liberal Arts. However it is only in the last 40 years that there has been a concerted effort to develop theoretical propositions in this field.

The lead in this development was given in the United States where an early significant influence was Ralph Tyler's *Basic Principles of Curriculum and Instruction* (1949). A student of Tyler's who was to have a considerable effect on the development of the field of study was Hilda Taba who in 1962 published *Curriculum Development: Theory and Practice*. Other elaborations upon the Tyler "linear" model were to follow. Essentially, Tyler propounded a sequential list of considerations for the process of curriculum development. He suggested that curriculum construction should involve determining objectives, selecting learning experiences, organising these for effective instruction and evaluating their effectiveness (see Tyler, 1949:1). He then elaborated upon what must be accounted for if these steps are to lead to valued outcomes. For example, in determining objectives, learners, society and subject specialists must be consulted. Similar expansions are provided for each of the steps in the model. Whilst such a list of recommendations might serve as a useful reminder concerning potential considerations in framing any curriculum, they provide no guarantees of agreed outcomes by alternative curriculum planners. That is, the reality they seek to explicate is too complex for any authoritative prescription to emerge from the engagement with all that Tyler or his followers have recommended. More situation specific aspects of content, teachers and learners must always be critical in determining what is to be prescribed. The problem is then that if "curriculum theory" becomes that specific, and so prescribes what should be done in practice, it must be rendered so unwieldy that it would have no utility and no status as a body of overarching generalisations.

An alternative school of curricular thought sought to engage with the specifics of actual educational behaviour by describing what "really" occurs during curriculum planning. This is associated with the work of Walker (1972) in the USA and with successors to Stenhouse at the University of East Anglia in the UK. Its limitation as a source of educological theory is that, unlike Tyler's method, it eschews any predetermined interpretative structure. The preoccupation is with "objective" description of the given curricular behaviour. As a result, its findings lack a sufficient generality of transferable application to justify their status as a specialist fund of knowledge. This "naturalistic" approach is at one with the preceding sociological preoccupation with social interaction and with the current fashion for ethnographic studies of schools. The implications of such studies for educational practice are seldom apparent.

Tyler's "linear" approach and Walker's "naturalistic" one represent alternative ends of a continuum of "theories" of curriculum (See Marsh and Stafford, 1984:4-12) In a recent review of such theories, it was observed that "... no major curriculum theories were introduced during the 1970s [sic] and the 1980s don't appear to be set for any major advances" (Marsh and Stafford p 50) However this has not prevented a proliferation of teacher education courses in that period with titles such as *Curriculum Theory, Curriculum Design, Curriculum Planning, Curriculum Development* and *Curriculum Evaluation*

The increased enrolments in such courses, especially at the postgraduate level, possibly owed something to a policy concern with questions of the relevance, both social and vocational, of prescribed curricula, to the adoption of "choice and diversity" objectives with the associated unitisation of the curriculum and, perhaps most prominently, the deliberations in the USA, UK and Australia over a "core curriculum" for secondary schools A notable feature of the discussion of these questions is the infrequency of reference to any elements of curriculum theory Certainly in the UK, the latest Director of the London Institute, Denis Lawton, has written on these matters (1973, 1975, 1980, 1983), as has Malcolm Skilbeck in Australia (1984), at one time a Professor of Curriculum Studies at London, first Director of the Australian Curriculum Development Centre and now the Vice Chancellor of Deakin University in Australia However their work could hardly be regarded as providing a theoretical underpinning for any curricular prescriptions adopted in either society

Despite the failure to develop theoretical insights it remains clear that there is a need in educology courses for the study of curricular questions more general than the prescription of valued content for specific school subjects What has not been established, as already suggested in the assessment of Tyler's "linear" and Walker's "naturalistic" methods, is a significant body of concepts and generalisations distinct from those to be found in the foundation studies or in the curriculum and methods studies for particular subjects Until such a unique and substantial store of knowledge is established, it is difficult to justify a major allocation of resources to study in this field

The difficulty of making the concepts of curriculum theory operational can be seen by examination of one of the distinctively curricular concepts, the notion of ***balance*** Clearly it is a concept that has application at a level which subsumes the particular content areas of study The ancient Greek quadrivium and trivium, the "seven liberal arts", probably constitute the best known and most influential model of appropriate curricular balance However it is not at all clear how this structure or any of the alternative ones prescribed in succeeding eras can be given any justification by a distinctive, coherent and comprehensive theory of such balance The recent estimate by a prominent English curriculum theorist of the epistemological status and the utility of the concept appears to be justified

> The question remains ... whether "balance" is in any way a useful concept to the curriculum planner It is far from being a scientific concept It is riddled with unquestioned assumptions of many different kinds These assumptions are often

> in conflict, revealing that there are as many theories of what might constitute curriculum balance as there are views of education. [Kelly, 1986:145]

This incapacity to authenticate a definitive "balance" prescription might account for the absence of any reference to authoritative theory in the recent official national curricula proposals in the USA (1983), UK (1988) and Australia (1988).

Perhaps it is this apparent lack of application which has led to a waning of the enthusiasm for the macrolevel curriculum studies. In this regard the second of the "abstract methodologies," administration studies, is proving more resilient in its aspiration to become *a*, if not *the*, defining field of educology.

(ii) Administration Studies

That there might even be some inverse relationship between the eminence of curriculum and administration is suggested by the comments of Sergiovanni and Starratt, two prominent spokespersons for the latter field, in their popular text, *Supervision* (1988, 4th edition):

> The third edition noticed that a mild renaissance of interest in supervision and supervisory activities was in the making ...
>
> At the national level the Association for Supervision and Curriculum Development had begun to place stronger emphasis on supervision .... [p. 1]
>
> Today supervision is clearly the "in thing" in American schooling. What was once a mild renaissance has turned into a revolution .... [p. 2]
>
> Instructional leadership is the hot topic in thousands of seminars and workshops provided for administrators and supervisors by states, professional associations, local school districts, and individual entrepreneurs. [p. 2]
>
> The academic side of the professional educational community is experiencing a similar flurry of interest in supervision. [p. 2]

Australia has not been untouched by the "renaissance" and "revolution," both "supervision" and "leadership" emerging as dominant themes in the burgeoning education administration programs:

> Over 1200 students of educational administration are currently enrolled in Australasian universities, with the 1986 entrant cohort of 450 nearly doubling the 1984 numbers. All figures can be doubled again by adding the Colleges of Advanced Education enrollment [sic] data, and together present a field of study with strong, sustained demand and steadily rising quotas. [Macpherson, 1987:ii]

This development appears to owe more to American than British example. It seems unlikely that British teacher education will be unaffected, but the historical tradition of a liberal education as preparation for supervision and leadership might prove more resistant to the more professionally focused administrative studies.

The two questions which should be asked concerning such courses, in the light of the educational resources being directed to them, are, firstly, how effective are they in enhancing students' learning, and secondly, how distinctive are they to the larger fund of knowledge of educology.

Clearly the exchange of experience in the administration of any social process is likely to be beneficial to some degree. It seems likely too that some such experiences can be conceptualised and tested in such a way that they can constitute reliable theoretical knowledge. For example, this has been demonstrated for the effects on educational achievement of school and class groupings of various subcultural populations However what must also be addressed is what level of educational resources can justifiably be allocated to the study of such knowledge in the light of probable effects That is, what amount of communicable, specialist knowledge, appropriate for study at the postgraduate level, is available concerning the various educational administrative tasks?

It is apparent that an extensive vocabulary of concepts has been developed to describe administrative behaviour What is less apparent is that these concepts can substantially facilitate a more efficient administrative process Certainly they have not yet given rise to a substantial set of instructive generalisations In the fourth edition of the text, *Educational Organization and Administration* (Morphett, Johns and Reller, 1982:54-55), an administration theorist, often quoted with approval in such texts, is claimed to have "identified some propositions aiding or inhibiting change which have been derived from the system theory model," which relate to the "interest at the present time in innovation and change in education" (p 54) There follows a list of eight generalisations which in no instance transcend commonsense and which in every case is clearly conditional upon contextual circumstances The first and the last of these are illustrative of the remainder

> The major impetus for change in organizations is from the outside.
>
> The more functional the dynamic interplay of subsystems, the less the change in an organization. [pp. 54-55]

Similar banal generalisations are offered on the question of educational leaderhip, including, "Whether a person is a leader in a group depends upon the group's perception of him" (p 107)

It is not being suggested that some study of administrative procedures as practised in the educational process is inappropriate, but in the absence of more substantial evidence to the contrary, it can be suggested that such study should not occupy a considerable time in teacher education programs Certainly there is not very much evidence of administrators in general making reference to theoretical guides to their administrative practice, though clearly the commitment to scientific management early in the century, to human relations in the interwar years and to systems theory in the postwar era have influenced administrative behaviour in education to some extent But this may have more to do with transient social norms than authenticated scientific knowledge

On the question of the scientific status of administrative understanding, there is less than unanimity In the text just quoted, there is the acknowledgement that "Educational administration has not yet become a science, but progress is being made in developing some knowledge based on theory which has been tested by research" (Morphett et al , 1982 x) In what follows in the text, "important problems and issues" feature as a final section in all of the 19 chapters, "generalisations" and "implications," in only two In a similar text, in its third edition in 1987, the authors open with the claim that "The science of educational administration is as new as the modern school" (Hoy and Miskel, 1982 1) and later assert, optimistically, "Much of the skepticism about theory is based on the

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assumption that educational administration is incapable of becoming a science, a skepticism that plagued all of the social sciences in their gestation" (p. 17). These scientific aspirations are much less often expressed by the more prominent theorists of recent times. Certainly Sergiovanni and Starratt do wish to lay claim to *theoretical* knowledge:

> Supervisors and other busy professionals typically do not characterize their work as being informed by theory. ... What at first glance seems not to be theoretical, however, turns out to be theoretical. In fact, it is very difficult to engage in teaching or supervisory practice without being theoretical. ... Much of the theory which guides professional practice is implicit and informal. [p. 3]

What must be asked of such a claim is what is here intended by the term *theory*. Unless the generalisations and associated prescriptions can be made explicit, in a form which is more specialist than colloquial expression, and more powerfully instructive than commonsense, then the large scale commitment of educational resources to their study is clearly open to challenge.

However the trend as evidenced by Sergiovanni and Starratt is, whilst renouncing scientific status, to opt for a mixture of theoretical eclecticism and humanistic holism. This recipe leaves the boundaries of the educational administration studies undefined and the subject area potentially all encompassing. The eclecticism is expedient rather than scientific in character:

> Theories of administration ... should not be viewed as competing, with the thought that one best view might emerge. Instead, the alternate and overlapping lenses metaphor is offered. When viewed in this way, each theory of administration is better able to illuminate and explain certain aspects of the problems administrators face but not others. Increased understanding depends upon the use of several theories, preferably in an integrated fashion. [Sergiovanni, 1984: 1]

An emphasis upon the less tangible, "cultural" aspects of educational organisations has grown to complement the declining faith in scientific theory. In a text edited by Sergiovanni and Corbally, it is argued that "organizations are manifestations of culture [sic] and we may undertand them with only as much ease or difficulty as we can understand the culture in which they are embedded" (Greenfield, 1986: 145).

Similar trends were identified in the Australian study of educational administration:

> Research in the field was once characterized by a behaviorist and quantitative orientation. It has diversified in the last decade to straddle a range of philosophical, strategic, cultural and political questions in education." [Macpherson, 1987: ii]

Once this broader cultural content is made central to such studies, it gives rise to doubts as to whether specialists in educational administration are the best fitted to lead such study and whether courses intended to provide such cultural understanding are best offered under the *administrative studies* rubric.

That such courses are yet to justify their present prominence might be questioned in the light of the judgments of some of their principal proponents:

> Confusion in role definition still plagues the field, and uncertainty exists in

> determining who are supervisors, what are the key components of their jobs, how much authorty they should have, and what their relationship to administrators and teachers should be. [Sergiovanni and Starratt, 1988:15]

The text from which this is taken does not presume to resolve these confusions, whilst Greenfield is no more optimistic about leadership tuition:

> I am not convinced we know very much about leadership as a general phenomenon, whether it occurs in schools or other places .... To talk of leadership ... we must talk about leaders and about those who follow them or who fail to follow them. We must talk too about the meanings that bind leaders, followers, and all participants together in the social setting. Such a setting we may call the organization or just life. [p. 159]

For such sociocultural studies, can the older British tradition of a liberal, humanist education be inferior to courses in leadership and supervision as preparation for effective educational administration?

These epistemological reservations concerning the capacity of administrative studies to inform educological understanding can be distinguished from those which derive from a conception of educology as focally concerned with the teaching and learning of knowledge and skills. In this latter conception, administration in any but the within-class context, and perhaps not even then, can be seen as facilitative rather than substantive to the educational process. That is, it is essentially concerned with the establishment of a context only, albeit one which is optimally conducive to efficient and effective knowledge communication and acquisition. In fact, it is clear that most study in educational administration is concerned with out-of-class situations -- the management of schools or school systems.

A characteristic of the texts in educational administration is their virtually total neglect of the content of learning, as if that content has no bearing upon how teaching and learning might best be conducted. The infrequency of references to content is nearly matched by that to students. Very little of the intransigent variability of student aptitude and ability sullies the discussion of administrative problems. Since the days of scientific management, the absence of the clientele is less than absolute, but the text books seldom evoke the pungency of the *actual* in educational encounters.

The fact that abstractness and a preoccupation with methodological efficacy are associated with administrative theory in the age of large scale, rational, bureaucratic organisaiton is perhaps more predictable than it is for either curriculum or teaching studies. However, as has been argued, much of curriculum studies have been less than centrally concerned with what is or can be taught and learned by whom, when and how. Now it will be suggested that much of teaching studies too has treated such questions rather more marginally than might have been expected.

(iii) Teaching Studies

The study of teaching is a third abstract methodological concern which has burgeoned in the last few years. It might be seen as the inheritor of the legacy of the 19th century courses on pedagogy, though it is rather less directly concerned with the applications of the "science of teaching" than they were Members of the International Study Association on Teacher Thinking (Ben-Peretz, Bromme, and Halkes, 1986) clearly consider their studies are central to educology In assessing their theoretical significance, some assessment should be made of their potential to achieve scientific status

Belief in a possible science of teaching was not uncommon in the late 19th century Speaking of American and European normal school teacher education of that period, Cubberley (1922) suggests that " the new subject of pedagogy began to take form and secure recognition, and psychology became the guiding science of the school" (p 417) Such a view was sponsored by the widespread adoption of Herbartian theory and practice, Herbart having "conceived of the educational process as a science in itself" (p 421)

Not all American educologists adopted this view President Eliot of Harvard whilst sponsoring the adoption of educology as a course of study, did not believe that there was then a sufficient accumulation of experimental evidence for it to be regarded as a science (Powell, p 43) He further believed that the particularity of *teaching* would always prevent the development of sufficiently general rules of procedure for it to qualify for that status (p 44) It was no coincidence that the first Harvard appointment in educology was designated as an appointment in the "*history and art of teaching*" and Eliot resisted subsequent attempts to have that title changed As indicated his view was shared by his eminent faculty member William James, who did not see his special field, psychology as providing a scientific guide to teaching In this, he perhaps lacked the optimism of his London contemporary, John Adams who, it is claimed, emphasised " the importance to education of the new and growing science of psychology" (Curtis and Boultwood 1966 221)

As the title of his immensely popular book, *The Art of Teaching* (1951), suggests Gilbert Highet of Columbia University echoed Eliot's view "I believe that teaching is an art not a science " He went on to write

> Of course it is necessary for any teacher to be orderly in planning his work and precise in his dealing with facts But that does not make his teaching scientific ... Teaching is not like inducing a chemical reaction: it is much more like painting a picture or making a piece of music, or on a lower level like planting a garden or writing a friendly letter. You must throw your heart into it you must realise that it cannot all be done by formulas, or you will spoil your work, and your pupils, and yourself. [pp. vii viii]

These contrary conceptions raise the question of what can usefully be said about teaching that is consistent with the usual requirements of expertise and profundity that is expected of higher levels of study

In more recent times, students of teaching would perhaps usually argue that any theory concerning effective practice should incorporate elements of both art and science (Orlich, et al , 1985 2-5) Something of the difficulty of description is acknowledged by a prominent theorist of teaching in the USA Philip W Jackson His conclusion, after a career centred upon the study of teaching, is summarised in terms of three convictions

> The first says there is no such thing as a behavioral definition of teaching and

> there never can be.
>
> The second ... says that our attempt to say when a person is or is not teaching is always an act of interpretation.
>
> The third conviction .. denies the possibility of our ever arriving upon an enduring definition of what it means to teach. [1986:77-78]

If this suggests that something less than a scientific body of theory is feasible, it does not deny the utility of the developoment of rules of application for teaching with more or less probability of success. But it does suggest necessary limitations upon the scope and reliability of such rules.

The most recent influential initiative in teacher education, epitomised in the deliberations of the International Study Association on Teacher Thinking (ISATT), is, like Jackson, primarily concerned with the pursuit of description, rather than prescription. Nonetheless there is in their publications an optimism concerning causal explanation, which Jackson appears to relinguish, though that explanation is to be pursued through a combination of artistic and scientific means. However, what is less evident, though not ignored, is the implications for practice of the new store of information about the thinking of teachers.

In a publication of the ISATT, the three section titles convey this pure science, liberal study, descriptive predisposition:

> 1. Conceptual advances: discussing leading metaphors for teacher thinking and teaching dilemmas.
> 2. Content and process thinking in various task domains: assessment of students, subject matter "computer literacy" and teaching.
> 3. Advances in methods of data collection and analysis. [Ben-Peretz, Bromme and Halkes, 1986]

The first work in the ISATT publication, "Ten Years of Conceptual Development in Research on Teacher Thinking" (Clark, p. 7), refers to a "continuing and troublesome issue: that of the relationship between research and the practice of teaching" (p. 14). There follow some suggested beneficial effects of research upon teaching, of a very general kind. But then it is concluded that the experience of ten years

> ... has led to a constructive turning away from the goal of "making good teaching easier" to that of portraying and understanding good teaching in all of its irreducible complexity and difficulty. Quality portraiture may be of more practical and inspirational value than reductionist analysis and technical prescriptiveness. [p. 14]

But then it may not be. There is here an optimisim not shared by Jackson, and there is too a conception of educology as not pre-eminently an applied domain of study. As will be argued in the final section, that conception is inconsistent with a desirable identity for educology.

There is a further preoccupation with "research on teacher thinking." Clark emphasises the abstract, that is, content free, character of such studies:

> A ... possible reading of our recent history is that we continue to prize process over the content and substance of instruction. We have described and come to better understand various planning, decision-making, and reflective processes used by teachers. But there is considerably less attention to the quality and

> organization of what is being taught. Even the curricularists among us seem more caught up in a focus on process than on the content of teaching. [p. 16]

This neglect of content makes the new teaching studies, along with curriculum and administration studies, ineligible as focal sources for definition of educology. They are too abstract to constitute effective guides to application, for any such guides or "rules" must incorporate reference to *what* is to be taught and learnt.

3. Identity for Educology

The central objective of educology is properly the more effective and efficient teaching and learning of valued knowledge and skills. The more directly courses in educology are geared to that objective, the stronger will be the identity of educology. A necessary and prior requirement is the teacher's understanding at the most profound possible level of the knowledge and skills to be communicated.

> If anything is to be regarded as a specific preparation for teaching, priority must be given to a thorough grounding in something to teach. ... A teacher, in so far as he is concerned with teaching and not just with therapy, "socialization," or advice about careers, must have mastered something which he can impart to others. [Peters, 1977:151]

Later Peters expresses his "horror of generalized talk about the curriculum by those who know little of the problems connected with teaching particular subjects" (p. 172). What he fails to do is to infer from this that distinctive to educology is the scholarly study, not of the indispensable knowledge and skills, though that must come first, but rather of how these can best be taught and learnt by different students in different times and places.

In other words, the fields of study most central and distinctive to educology have been the ones usually ascribed lowest status, namely curriculum and methods of the several school subjects. These fields have since the brief bloom of the "structure of the disciplines" in the 1960s been a province of declining resource allocation and unpromising career prospects. Educologists with specialisations in curriculum and methods have often in the past "graduated" to the foundations. They now frequently seek enhanced status in one of the abstract methodologies. A tangible result of inferior status and resource allocation is a less than optimum return on the investment of educational resources in terms of student achievement. Less tangibly, it has also meant a continuing uncertainty of identify for educology.

It is in the established content fields, leaving aside epistemological disputes about the meanings of the terms 'disciplines', 'subjects', 'forms of knowledge', or 'realms of meaning', that there exists a *foundational* store of knowledge and skills for educology. The concepts, generalisations and procedures of mathematics, natural and social sciences, humanities and arts, are the raw material for any effective teaching and learning. The distinctively educational activity is the organisation of the teaching and learning of these concepts, generalisations and procedures in ways that maximise the achievement in them of the various members of the student population.

It should be emphasised that it is not here being assumed that students come to educology courses already having acquired all of the required content knowledge and skills. Rather these are in a constant state of evolution and process, and the chief activity of curriculum and methods will be such a processing to enable a restructuring to the needs of given teaching circumstances. In such an activity, it is assumed new learning about the content should be taking place.

Where much educological theorising has gone adrift is in assuming that the character of the content can be ignored in arriving at educological prescriptions. That is, the study of teaching and learning has often become more abstracted than the power of the conceptualisation and the associated generalisations warrants. What is needed is more study of alternative modes of organising content for alternative student populations. Such study must be undertaken experimentally, through presentation to student groups of trial curricular prescriptions, not tested merely in the minds of educological theorists. Selecting valued subject matter from the various funds of knowledge, organising this into units of appropriate size, arranging these in optimal sequences, motivating student interest in the learning, reinforcing their achievement in it and adjusting all of this for teachers and learners of varying aptitudes and abilities are clearly undertakings of great scope requiring considerable expertise as well as experience. The outcomes in terms of educological understanding must be limited by the necessary empirical and ethical constraints upon human studies, but the increased understanding already achieved in the teaching of various subjects, without the focus of concern here advocated, is an indication of the considerable potential of such a reorientation.

In taking this role, educologists would be following the lead given in applied fields such as medicine and engineering, which have not suffered similar identity problems to educology. Nor have their practitioners proved so reluctant to engage directly with the *substantive* subject matter of their fields. Certainly they have had the advantage of pursuing apparent and agreed objectives, however they too have been dependent upon prior content subjects for their foundational store of knowledge. These content subjects are brought to bear upon questions unique to their respective fields. Their application requires the distinctive inventiveness which William James conceived as a necessary special talent of the teacher. By focusing upon the scholarly study of "What is being taught, to whom, by whom, and to how many" (Peters, p. 151), with what effect, rather than aping the foundation disciplines, or engaging in abstract theorising which neglects the specific constraints of subjects and students, at least three desirable outcomes can reasonably be expected: (1) extension of student learning, (2) enhancement of academic status for educologists and (3) establishment of a clear and proper identity for educology.

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Book Reviews

Random, Routine, and Reflective: Three Levels of Action.

James F. Perry. Dubuque, Iowa: Kendall/Hunt, 1989. Pp. 120. Paper.

Random, Routine, and Reflective examines human conduct in terms of whether it is haphazard, habitual or thoughtful. It relates these three distinctions to three modes of conduct -- preconventional, conventional and postconventional. It argues that the preconventional mode of human action is characterised by disorganised, haphazard, randomised action. The conventional is characterised by relatively invariant habits, routines and rituals. The postconventional is characterised by intelligent awareness, selfconscious deliberation, reflection, reasonableness, informed choice and responsibility.

In addition to drawing and explicating these distinctions, the book examines four categories of problems which traditionally are part of philosophical inquiry, i.e. problems of logic, metaphysics, epistemology and axiology. It identifies what problems are normally treated within each of these categories and it presents contemporary and ancient examples of attempts to bring these problems to some satisfactory resolution. A concluding chapter offers a valuable summary of the critical differences among random, routine and reflective action and an explanation of why these distinctions are important.

The intended audience for *Random, Routine, and Reflective* is college and university students who are studying introductory general philosophy. While the book can obviously serve as a useful introductory philosophy text, it should interest students, lecturers and professors of eduology as well. In the author's words,

> **This book is well suited to what colleges [and universities] at their best are trying to do. Colleges [and universities] are trying to prepare students for every trade and profession, of course, but at their best they are also preparing their students for responsible self-governing, career mobility, and thoughtful citizenship. To achieve these goals, it is vital that students be shown how to maintain their own integrity when faced with contradiction and change. That is what the three-level model explained in this book is intended to do. [p.viii]**

This book has value for those who study and teach educology because in undertaking to study educology, considerations of random, routine and reflective action are critical. The three levels of action relate intimately to the very process of education as well as to the purposes or intended outcomes of education. This book is to be recommended to all educologists, not just those with a concern for the specialisation of philosophical educology (or philosophy of education).

Editors

Curriculum: Product or Praxis? **Shirley Grundy. London: The Falmer Press, 1987. Pp 209. $34.94 (Australian currency), paper.**

Curriculum: Product or Praxis is part of the Deakin Studies in Education Series sponsored by Deakin University. The series is intended "to present a broad critical perspective across a range of interrelated fields in education" in order to "develop what might be called a 'critical educational science'" (p vii). This is a worthy editorial goal, and it is consistent with extending the scientific part of educology.

The author states that she has the classroom teacher in mind as the main readership for *Curriculum* and that her main purpose is to present a theory which has utility for giving guidance to teachers in improving teaching and learning. So the perspective which is implied by the author's stated intention is one of praxiological educology rather than scientific educology. It is an intention which is not consistent with the series editors' stated intentions, but this is merely a problem of editorial integrity. It is a no less worthy goal to intend to extend the praxiological part of educology than it is to extend the scientific part.

Curriculum begins with the explication of three human interests which Jurgen Habermas distinguished in the 1970s, *viz* technical, practical and emancipatory. Grundy accepts that these are fundamental human interests and argues for the relationship among them and curriculum. Technical interests relate to curriculum as product. Practical interests relate to curriculum as practice. Emancipatory interests relate to curriculum as praxis. Examples are presented which are intended to illustrate the essential qualities of the three curricula and their connections with the three interests.

In spite of the author's intentions about readership, it is highly doubtful that classroom teachers would choose to read this book as a guide to classroom practice. They would dismiss it as too abstruse, too far removed from the real world of everyday teaching. On the other hand, it has obvious use in a postgraduate course in curriculum studies, where the enrolment would include practising teachers and where the book would be accompanied by other readings and by the guidance of a lecturer.

Like many books about curriculum, this one suffers from category mistakes, ambiguities and conflations of meanings. For example, teaching methods are permitted to be conflated with content which is being taught; knowledge is permitted to be conflated with knowing; retrosearch, research and neosearch are conflated with evaluation; fields of phenomena are permitted to be conflated with funds of knowledge; the term *theory* is permitted to function ambiguously so that the term makes hardly any distinction at all.

The subtitle is a curiosity as well. The question of "product or praxis?" suggests that the book will focus on whether curriculum should be regarded as product or praxis, but in fact the book addresses three questions, *viz* how curriculum can be distinguished as product, practice or praxis. There is overwhelming evidence that a great deal of confusion and fuzzy thinking went into the authorship of this book. We shudder to think what might go into the curriculum course which this book is used to support, and we look forward to the second edition in which these ambiguities are clarified and the conflations are dispelled.

Editors

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning process, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counselling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process, and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative), empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding towards several ends, e.g. towards heightened sensitivity for educational situations, effective participation within educational situations, the articulation of sound theory about educational situations and resolution of problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counselling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical; experimental and non-experimental; historical and philosophical; jurisprudential; interpretive, critical and evaluative; scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are

published. Contributers seeking publication of manuscripts should submit an abstract (100-200 words) and four copies of the manuscript. If the manuscript is available on a 3 and one half inch disc for Apple MacIntosh (Macwrite), please send a copy of the disc as well. Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 inch) paper with uniform margins (3 cm or 1 inch, both sides, top and bottom). To ensure anonymity in the reviewing process, the author's name should appear only on a separate title page. The subsequent pages should be numbered consecutively, and only the title (not the author's name) should appear on the first page. The length of manuscript should range between 5,000 to 15,000 words. The bibliography should be arranged in this form: Author (date): Title. Place: Publisher. Referencing in the text should be in this form: (Author, date: pages). Footnotes of explanatory text should be placed at the end of the text, but before the bibliography. Diagrams and charts should be camera ready for printing on offset.

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions. The educological perspective in discourse treats the educational process as the central concern (i.e. as the dependent variable) of the problem being addressed in the discourse. The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic, empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions. The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process.

For authors seeking further guidance as to what constitutes educology and the educological perspective, two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C.: University Press of America, 1981) and in "Education, Educology and Educological Discourse: Theory and Structure for Education and Constructive Action in Education" (J.E. Christensen, *International Journal of Educology*, 1:1 (1987), 1-32).

Manuscripts, editorial correspondence and inquiries about submissions should be sent to:

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International Journal of Educology, 1990, Vol 4, No 2

Editorial

Educology for Initial Teacher Education and for the Professional Development of Practising Teachers: Changing Needs, Changing Demands

Introduction

Confusion abounds within the curriculum of universities and colleges for both (1) initial teacher education and (2) the professional development of practising teachers. The evidence of the confusion is obvious in virtually every aspect of the teacher education process. The causes of the confusion are easily identified. The remedies are readily available. But negative attitudes, blind prejudices and widespread ignorance about fundamental, indeed, elementary distinctions in discourse about education prevent teacher educators' from developing (1) an awareness of, (2) an expertise in and (3) an appreciation for the application of the appropriate remedies. Through institutional and professional inertia, fundamental mistakes are perpetuated in the curriculum of teacher education over, not only a period of a few years, but generations. Structural changes are made. Departments, faculties and schools of education and of teacher education come and go. But the basic conceptual confusion and wrong headedness have stubbornly persisted in the discourse, books, articles and teaching materials of teacher educators. There is a need for much more than mere changes in organisational structure of universities and federal and state education departments to improve pre-service and in-service teacher education. There is a need for conceptual reformation in the discourse about education. This need constitutes a challenge which all teacher educators have a professional obligation to address. The question is whether teacher educators in both initial and in-service teacher education have the mettle to embrace the challenge.

Confusion in the Curriculum for Initial Teacher Education

The confusion within the curriculum for initial teacher education is universal. One does not need to go very far to find evidence of the confusion. For example, one can look at the handbooks and student information booklets of faculties, departments and/or schools of education or teacher education. A fairly typical profile of the curriculum of initial teacher education includes a description which goes something like this:

(1) general studies: general academic studies which one might find in a liberal arts degree such as history, sociology, mathematics, biology, etc.;

(2) foundation studies: sociology of education, history of education, philosophy of education and perhaps some comparative education; more recent variations on these names are *contextual studies* and *policy studies* of education;

(3) professional education: educational psychology, developmental psychology, learning

theories, curriculum design, general methods and strategies for teaching and perhaps some tests, measurements and evaluation, although these topics are often included with the educational psychology;

(4) specific subject matter and/or programmatic schemes for teaching a specific subject matter, sometimes called curriculum studies (e.g. science curriculum, art curriculum, mathematics curriculum, social science curriculum) and sometimes called a particular category of education (e.g. environmental education, physical education, music education, etc.);

(5) specific programmatic schemes for teaching a particular category of pupil, e.g. pupils with learning disabilities, Aboriginal education, education for the intellectually gifted, remedial education, economically disadvantaged children, etc.;

(6) teaching practice: usually conducted independently of any of the studies in (1), (2), (3), (4) or (5), but sometimes coordinated and related to some degree to the five categories.

This curriculum profile, which is offered here as one which is commonly found in teacher education programs in universities throughout Australia, New Zealand, the United Kingdom, the United States (and virtually the whole of the English speaking world for that matter), typifies both the confusion and the fragmented thinking about the educational process.

The six categories abound with category mistakes. The categories conflate classes of objects and processes which should be distinguished, and they distinguish categories which should be allocated to the same classification. The result is conceptual chaos and utter confusion. It only makes sense in a historical context, i.e. lecturers, publishers and students are used to seeing this classification. It is an old and familiar set of linguistic habits. But it does not contribute much to the resolution of educational problems or to effective action within the educational process. On the contrary, it gets in the way of clear reasoning about the educational process and constructive action within the process.

Causes of the Confusion

The confusion in the curriculum of teacher education begins with the ambiguous use of the term *education*. It is used simultaneously to name (1) the process of guided study, (2) inquiry about that process, and (3) warranted assertions about the process.

The Process of Guided Study.

An example of the first usage of the term *education* is in the sentence,

> We require children to undertake extensive [education] in the belief that it is necessary to prepare them for life as responsible and capable adults in society.

Substitute the term *guided study* for the term *education*, and the meaning of the sentence remains unchanged:

> We require children to undertake extensive [guided study] in the belief that it is necessary to prepare them for life as responsible and capable adults in society.

The process of guided study is one in which someone intentionally places himself or herself under the guidance of another for the purpose of coming to learn something within some cultural and social context.

Basic Components. The basic components of the process are a student, a teacher, a content (or subject matter) and a social and cultural milieu. The person who plays the role of student may be a brother, sister, a taxi driver, a bank teller, a school pupil or a university student. The person who plays the role of teacher may be a nephew, a niece, a hotelier, a solicitor, a school teacher or a university lecturer. The content or subject matter may be English grammar, chemistry, physics, history of the French revolution of 1789, train driving, child rearing, shoe lace tying, or bicycle riding. The cultural context may be that of French culture, Australian culture, Greek culture, Irish culture. The social context may be that of a family, a church or religious community, a school, a university, an office, a bank, a military unit, a factory.

Basic Processes. The basic elemental processes which constitute the process of guided study are studying (in the sense of studenting or pupilling -- placing one's self under the guidance of another for the purpose of learning something), teaching and, if all goes as intended, learning under guidance.

Derivative Components. The derivative components of the process of guided study are all of those categories which derive from the four fundamental components.

A person engaged in the role of teacher, for example, typically has a set of intentions (purposes, goals), holds a set of attitudes and values, exemplifies a style (gruff, abrupt, friendly, kindly), uses a set of methods (description, demonstration, explanation, exemplification, interrogation, explication, narration, direction, illustration), employs a set of strategies (group oriented or individually oriented; situation focussed, equipment focussed, materials focussed, teacher focussed, student focussed, self focussed), utilises a set of physical resources (books, tapes, paper, pen, etc.) and maintains a set of goal structures (competitive, cooperative, individualistic).

A person engaged in the role of student also typically has a set of intentions (purposes, goals), holds a set of attitudes and values, exemplifies a style (timid, bold, friendly, kindly), uses a set of methods (description, demonstration, explanation, exemplification, interrogation, explication, illustration, emulation), employs a set of strategies (group oriented or individually oriented; situation focussed, equipment focussed, materials focussed, teacher focussed, student focussed, self focussed), utilises a set of physical resources and maintains a set of goal structures (competitive, cooperative, individualistic).

From these derivative components, other components of the educational process may derive. For example, the curriculum derives from the intentions of teachers, students and interested third parties, such as parents, politicians and various interest groups; policies, rules and statutory regulations derive from interest groups within the social and cultural milieu.

Official and Unofficial Education. The process of guided study occurs within the social context of schools, colleges and universities. This is official education, which is accompanied by certificates, diplomas, degrees, professional administrators, enrolment records, scheduled terms or semesters, examinations and officially appointed teachers, instructors, lecturers or professors. Guided study also occurs among peer groups, families, workmates, etc. This is unofficial education. It still has teachers, students, content and cultural and social settings, but without the official trappings of schools, colleges, academies, institutes or universities.

Inquiry about Education

A second way in which the term *education* is made to function is to make it name the process of conducting inquiry about guided study. An example of this second usage is in the sentence,

> If you look at those researchers who identify their interests as [education], you will find that they focus mainly upon what happens in schools.

Substitute the term *inquiry about the process of guided study* for the term *education* and the meaning of the sentence remains unchanged:

> If you look at those researchers who identify their interests as [inquiry about the process of guided study], you will find that they focus mainly upon what happens in schools.

Inquiry is the process of asking questions about something. If the inquiry is systematic and disciplined, the questions are answered in accordance with rules of evidence. That is, questions are asked, answers are formulated, and necessary and sufficient evidence is adduced to warrant acceptance of the answers as being true or highly probably true.

The activity of conducting inquiry about the educational process, while connected with the process, is distinguishable from the process. The activities of a researcher who inquires about soil erosion are clearly distinguishable from the process of soil erosion. Likewise, the activities of a researcher who inquires about the conduct of children within a classroom under the guidance of teachers are distinguishable from the set of phenomena about which the researcher is inquiring. There is the process of education (guided study), and there is inquiry about that process.

Inquiry about education is commonly called research, and research divides into at least three categories: retro-search, re-search and neo-search. The activity of retro-search is conducting inquiry into knowledge which has already been established and re-presenting that knowledge. (Knowledge here is taken to be a set of warranted assertions.) Retro-search is search through the historical record. The activity of re-search is conducting inquiry for the purpose of reaffirming or disaffirming warranted assertions which have already been affirmed. Neo-search is inquiry for the purpose of affirming or disaffirming new assertions about education which have not yet been warranted.

Warranted Assertions about the Process of Education

An example of the third usage of the term *education* is in the sentence,

> Go to the [education] section in any university library, and you will find the works of John Dewey.

Substitute the term *warranted assertions about guided study* for the term *education*, and the meaning of the sentence remains unchanged.

> Go to the [warranted assertions about guided study] section in any university library, and you will find the works of John Dewey.

Warranted assertions about education are the product of successful inquiry about education. In the English language, we commonly distinguish warranted assertions about something from the something itself by using the suffix *-logy*. For example, biology is warranted assertions about living organisms. Toxicology is warranted

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assertions, or knowledge, about toxins. Hydrology is warranted assertions about water. It is possible to use the suffix *-logy* with the term *education* to form the term *educology*. The term *educology* names the warranted assertions about the educational process. Educology is knowledge about education.

Other Uses of the Term *Education*

In addition, the term *education* is used to name (4) the activity of teaching, (5) the process of learning and (6) the outcome of learning -- knowledgeability. At least two other usages are made of the term: (7) effective guided study and (8) worthwhile guided study.

An example of the fourth usage is in the sentence,

> [Education] is my profession.

Substitute the term *the activity of teaching* for the term *education*, and the meaning of the sentence remains unchanged:

> [The activity of teaching] is my profession.

An example of the fifth usage is in the sentence,

> When a child plays with other children, the child is engaged in [education] about cooperation, competitiveness and social interaction.

Substitute the term *learning* in the sense of *coming to know* for the term *education*, and the meaning of the sentence remains unchanged:

> When a child plays with other children, the child is engaged in [learning] about cooperation, competitiveness and social interaction.

An example of the sixth usage is in the sentence,

> To practise medicine competently, one needs to have a great deal of [education] about a wide range of matters.

Substitute the term *knowledgeability* for the term *education*, and the meaning of the sentence remains unchanged:

> To teach competently, one needs to have a great deal of [knowledgeability] about a wide range of matters.

An example of the seventh usage is in the sentence,

> If students do not learn from a teacher's lesson, the process does not deserve the name of [education].

Substitute the term *effective guided study* for the term *education*, and the meaning of the sentence remains unchanged:

> If students do not learn from a teacher's lesson, the process does not deserve the name of [effective guided study].

An example of the eighth usage is in the sentence,

> Although Fagin's students (in Dickens' novel, *Oliver Twist*) learned how to be effective thieves, it would not be proper to call the process [education].

Substitute the term *worthwhile guided study* for the term *education*, and the meaning of the sentence remains unchanged:

> Although Fagin's students (in Dickens' novel, *Oliver Twist*) learned how to be effective thieves, it would not be proper to call the process [worthwhile guided study].

Remedies for the Confusion

The principal cause of the confusion which is evident in teacher education curricula is the ambiguous use of key terms in writing and talking about education. The remedy for the confusion is the dispelling of the ambiguity. This is done by making a number critical distinctions.

An effective first step in dispelling the confusion is to identify the many uses of the term *education* and to distinguish clearly among them. In this clarification process, a critical distinction to pay attention to is the one between (1) the process of guided study and (2) warranted assertions about that process. It is the distinction between (1) something about which systematic inquiry can be made and (2) the product of that inquiry. It is a distinction which is much like the one between society and sociology, humankind and anthropology, or eyes and ophthalmology.

The distinction is difficult to maintain as long as one uses the same term *education* to name (1) the object about which inquiry is being made and (2) the product which is produced by the inquiry. However the distinction becomes much more evident when the product is given another name, and one of the best candidates for the task is the term *educology*. If *educology* is used to name warranted assertions about the educational process and *education* is used to name the educational process, i.e. the process of guided study, then it becomes clear that the relationship of education to educology is much the same as the relationship of society to sociology, psyche to psychology, or living organisms to biology. The term *educology* names warranted assertions about the educational process. The term *education* names the educational process itself.

The power of the use of the term *educology* may be illustrated by contrasting it with something like the sociology of education. There can be the educology of society and the sociology of education. How does the educology of society differ from the sociology of education? The sociology of education is knowledge about the way in which the educational process affects a society, i.e. the status of its members, social arrangements among its members and so forth. The educology of society is knowledge about how society affects education, e.g. how social status and social expectations can be destructive, constructive or reconstructive of the educational process.

This may give one occasion to wonder how many *educology of x* could be distinguished. Consider some of the possibilities:

(1) the educology of teaching
(2) the educology of studying
(3) the educology of gifted children
(4) the educology of learning disabilities
(5) the educology of preschools
(6) the educology of primary schools
(7) the educology of secondary schools
(8) the educology of universities
(9) the educology of mathematics teaching
(10) the educology of history teaching
(11) the educology of school administration
(12) the educology of curriculum
(13) the educology of special education
(14) the educology of health education
(15) the educology of environmental education
(16) the educology of reading education
(17) the educology of literacy
(18) the educology of adults
(19) the educology of the French
(20) the educology of the Somoans

(21) the educology of the family
(22) the educology of the workplace
(23) the educology of the armed services
(24) the educology of the Coptic Christian Church
(25) the educology of the Islamic faith
(26) the educology of politics
(27) the educology of economics
(28) the educology of law
(29) the educology of religion
(30) the educology of counselling
(31) the educology of play
(32) the educology of women

The list seems endless, and perhaps it is. But considerable order can be brought to the list by considering some of the critical categories of phenomena within the educational process about which warranted assertions might be made. At least five can be distinguished (of course additional categories can be distinguished, but they are less critical for the initial intending teacher):

(1) past educational phenomena (e.g. policies, practices, goals, teachers, pupils, content, milieux);
(2) present, existent educational phenomena;
(3) effective educational practices;
(4) worthwhile, ethical educational policies, practices, goals;
(5) implications of educational language;

Each of these categories implies part of the fund of knowledge about the educational process. The categories of knowledge which are implied are, respectively,

(1) historical educology,
(2) scientific educology,
(3) praxiological educology,
(4) normative philosophical educology,
(5) analytic philosophical educology.

Part of what each of these categories implies can be illustrated with the example of the educology of mathematics education.

(1) Adequate answers to the question, *How and why has mathematics education been conducted in the past*, imply the fund of knowledge constituted by historical educology.
(2) Adequate answers to the question, *How and why is mathematics education currently being conducted*, impy the fund of knowledge constituted by scientific educology.
(3) Adequate answers to the question, *What teaching and studying practices are effective for the promotion of learning about mathematics and why*, imply the fund of knowledge which is constituted by praxiological educology.
(4) Adequate answers to the question, *What mathematical concepts and rules are worthwhile to teach and learn and why*, imply the fund of knowledge constituted by normative philosophical educology.
(5) Adequate answers to the question, *What does the term*, mathematical education, *mean*, imply the fund of knowledge constituted by analytic philosophical educology.

As it is with mathematical education, so it is with any other aspect of the field of phenomena which constitutes the educational process. These five categories of questions can be asked of any set of phenomena within the educational process, e.g. the set of phenomena which constitutes environmental education:

(1) How and why has environmental education been conducted in the past?
(2) How and why is it being conducted at the moment?
(3) What teaching and studying methods are effective for engaging in the process of environmental education and why are they effective?
(4) What goals and purposes are worthwhile to achieve by means of environmental education and why?
(5) What is meant by the term *environmental education*?

Adequate answers, i.e. warranted assertions, which address these five questions constitute a substantial part of the educology of environmental education.

These five critical categories of questions imply a structure for educology within the curriculum of teacher education programs. Let us re-examine the example of a teacher education curriculum which was presented at the beginning of this analysis:

(1) general studies: general academic studies which one might find in a liberal arts degree such as history, sociology, mathematics, biology, etc.;
(2) foundation studies: sociology of education, history of education, philosophy of education and perhaps some comparative education; more recent variations on these names are *contextual studies* and *policy studies* of education;
(3) professional education: educational psychology, developmental psychology, learning theories, curriculum design, general methods and strategies for teaching and perhaps some tests, measurements and evaluation, although these topics are often included with the educational psychology;
(4) specific subject matter and/or programmatic schemes for teaching a specific subject matter, sometimes called curriculum studies (e.g. science curriculum, art curriculum, mathematics curriculum, social science curriculum) and sometimes called a particular category of education (e.g. environmental education, physical education, music education, etc.);
(5) specific programmatic schemes for teaching a particular category of pupil, e.g. pupils with learning disabilities, Aboriginal education, education for the intellectually gifted, remedial education, economically disadvantaged children, etc.;
(6) teaching practice: usually conducted independently of any of the studies in (1), (2), (3), (4) or (5), but sometimes coordinated and related to some degree to the five categories.

The *general studies* category implies all funds of knowledge other than educology. For the preparation of intending professional teachers, it makes good sense to include a study of a judicious selection of the funds of knowledge and the disciplines of inquiry associated with producing those funds. It makes good sense for at least two reasons. The intending teachers need to study the knowledge in order to contribute to their ability to live well balanced lives, and they need the study so that they can come to know worthwhile content to teach. To be well balanced and to be prepared professionally, they need to study knowledge from the three basic groups of physical, biological and hominological knowledge (i.e. knowledge about physical existence, living phenomena and humanity). These three groups encompass all other funds of knowledge, except theology.

Categories (2), (3), (4), (5) and (6) imply studies of educology.

Foundation studies (category 2) implies the educology of society, historical educology, philosophical educology and comparative educology.

Professional education (category 3) implies the educology of psyche (mind), the educology of development, the educology of learning, the educology of curriculum, the educology of methods and strategies for teaching and the educology of evaluation, including tests and measurements as components of evaluation.

Curriculum studies (category 4) implies the educology of some specific subject matter, e.g. the educology of art education, the educology of science education, the educology of mathematics education, the educology of social science education, the educology of environmental education, the educology of physical education, the educology of music education, etc.

Specific programs (category 5) implies the educology of pupils with learning disabilities, the educology of Aborigines, the educology of the intellectually gifted, the educology of remedial education, the educology of economically disadvantaged children, etc.

Teaching practice (category 6) implies the educology of teaching.

The conceptual knot constituted by categories (2) - (6) can easily be untangled by a rearrangement. The guiding principle for the rearrangement is the basic components of the educational process, its basic processes and its derivative components. It is a far more sensible arrangement for intending teachers to study the following categories:

(1) The educology of teachers and teaching (including intentions, purposes, goals, attitudes, methods, styles, strategies, resources, focus, orientation, goal structures, patterns of activites);
(2) The educology of students, studying and learning (including capabilities, intentions, purposes, goals, attitudes, methods, styles, strategies, resources, focus, orientation, goal structures, patterns of activites, achievements);
(3) The educology of content or subject matter (physical, biological, hominological) for teaching, studying and learning;
(4) The educology of society, culture and curriculum.

In order for the studies to be adequate, the five critical questions must be addressed in each of the four arrangements of educology, *viz*

(1) What has been the past of X and why? (the historical educological question);
(2) What is the present state of X and why? (the scientific educological question);
(3) What practices are effective in relation to X and why? (the praxiological educological question);
(4) What goals, policies and practices are worthwhile and ethical for X and why? (the normative philosophical educological question);
(5) What is the meaning (or meanings) of the term *X*? (the analytic philosophical question).

Teaching practice, if it is well conceived and performed properly, is the engagement of an intending professional teacher in the educational process in such a way so as to maximise the opportunities for the practising teacher's pupils to learn some nominated and worthwhile content with some intentional, purposeful, well justified outcome in mind. Proper goals for teaching practice include the development of the student teacher's theoretical adequacy, procedural soundness and appropriate sensitivity to educational situations and to needs and expectations of pupils. Evidence of the student teacher's theoretical adequacy is the ability to state the concepts, principles and explanations studied in the four arrangements of educology. Evidence of the student teacher's procedural soundness is the ability to take action which maximises the opportunities for pupils to achieve intended worthwhile learning. Evidence of the student teacher's sensitivity is the ability to recognise and respond to pupils' needs appropriately. Sound and adequate teaching practice is a practising which is informed by the educology of teaching and which is consistent with the educology of teaching.

Professional Development of Practising Teachers

It is unreasonable to expect intending teachers in initial teacher education to master all of the educology which has been accumulated over the centuries. And as time proceeds, educology becomes refined, reformed and reconstituted through additional inquiry. For these two reasons, it is reasonable and proper to expect professional teachers, once they become registered, practising teachers, to engage in further study of educology as well as of other funds of knowledge, such as mathematics, history, technology, etc.

The underlying principles for structuring the educology curriculum for in-service practising teachers remain the same as those for intending pre-service teachers. What should happen is the in-depth study of the four basic categories in relation to the five critical questions with the intention of extending the in-service teachers' theoretical adequacy, procedural soundness and educational sensitivity.

Challenges to Teacher Educators

There are several challenges which confront teacher educators. The first is to practise regarding themselves as teachers of educology. The second is to reconstruct their writing and talk about education into educological discourse. The third is to know educology well enough to exemplify to intending teachers and practising teachers the benefits of being expert in educology, *viz.*,

(1) to demonstrate theoretical adequacy about the educational process,
(2) to practise procedural soundness within the educational process and
(3) to demonstrate appropriate sensitivity for the educational process.

These achievements will constitute the *bona fides* to intending and practising teachers that the process of teacher education is useful and worthwhile.

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An Educology for Science and Technology in Nigeria: Pressures and Constraints

C. O. Ameh and E.Y. Gyuse
University of Jos
Jos, Plateau State, Nigeria

ABSTRACT

While science and technology are having a profound impact in the process of modernization in Nigeria, many problems arise from the unintelligent and ill-informed use of science and technology. This is especially apparent within the ordinary household and the workplace. The kinds of basic misapplications and mistakes which are made indicate a misunderstanding of science and technology and even an aversion to their rational use in certain aspects of living such as in the treatment of disease and in the cultivation of crops. What is needed in Nigeria is the development of a science culture, if this is desirable, and this requires a transformation of basic attitudes as well as the development of basic skills associated with scientific and technological thinking. One of the ways to facilitate this cultural transformation is to develop sound science and technology education programs in primary and secondary schools.

Introduction

Nigeria as a developing nation faces inumerable problems. It is a pluralistic nation, made of different ethnic groups with different languages. It has to operate within two cultural spheres: Western oriented and traditional. In addition, Nigeria has to cope with the problems of urbanization, industrialization and modernization. In view of all of these disorienting changes, it is difficult, if not impossible, for most individuals within Nigeria to reconcile their indigenous beliefs and practices with natural science and modern technology.

What is Science and Technology

Rather than define science as the study of our natural environment, we would prefer to conceive of it as a discipline which has substantive implications for teaching humankind about (1) the universe, (2) the accessibility of the universe to humankind's reason and (3) the functioning of the universe in ways which can be described by laws.

Defining science requires an explication of its nature. In view of recent changes in the world, there is need for a classical understanding of science as a search for objective and verifiable truth, as well as an understanding of its modified meaning as it affects industrialisation, politics and economics. Science is a process of social activity in which we seek to discover and understand the natural world, not as we would prefer to imagine it to be, but as it really is (Brown, 1980: 198). Such understanding is based mainly on observational data and experiment.

Science is also a product which is available to public scrutiny. It is a report of what scientists have found so far and about which the scientific community has agreed. In modern times, science has been greatly industrialized, and it has become allied with political and economic power. This alliance has led many to pursue science mainly for industrial and other social purposes, such as defence, agriculture, health and so on. The implication of this modern outlook in science is that science should be taught at all levels with both its process and product firmly linked.

Technology on the other hand, we view as the processes and products of science. Others take different views of technology. For example, Mesthene (1970) sees it as the organization of knowledge for the achievement of practical purposes. Bennett (1978) and Fiebleman (1972) conceive of technology as a set of skills, techniques and activities for shaping materials and fabricating objects for practical ends. Litterer (1973) and Hetzler (1969) define it as comprised of tools, machines, devices and gadgets. Henschke (1984) sees technology as having three dimensions: (1) a set of artefacts or articles (e.g. a computer, abacus, laser beam or stone axe); (2) a process, i.e. the application of knowledge and skills in solving practical problems; (3) a power or ability (i.e. the knowledge and skill applied in using artefacts and processes).

Within the context of our argument here, we look at science and technology as a human activity related to social, economic and political welfare. Science and technology provide a focus on, a window for looking at many different issues like social change. It is no exaggeration to say that they provide a major part of the basis, if not the basis, for modern civilisation.

Technology dates back to the very beginning of humankind itself. Some technologies have remained static in some countries, while others, for various reasons, have grown and bloomed in other countries. In general, the level of life of any society is dictated by the level of that society's technological expansion and development.

Technology is a motive force in all aspects of human civilization. Nigeria has many technologies which are indigenous to it. These include soap making, alcohol brewing, sugar and boat making, building, weaving, dyeing and others. In addition, there are many technologies that Nigerians need which are foreign to their cultures and which they must learn before they can fully enjoy them.

The idea of transfering or borrowing technologies may sound attractive, but the process is complicated because of a lack of understanding of the technologies. People look at science and technology as both paradise and hell (Ravetz, 1971). Ravetz has argued that in many ways the public's appreciation of science and its products and processes is woefully inadequate.

Although there is a sense of appreciation among some Nigerians for the comfort and security of life which is achieved by modern technology, and there is general acceptance of the claim that improved standards of living are the byproducts of scientific research, the majority of the society does not necessarily embrace, or even accept science and technology as processes of inquiry and problem solving which apply to daily living.

Complex cultural factors inhibit the acquisition of science and technological knowledge and its applications. By and large, the masses within Nigeria are much wrapped up in superstition, traditionalism, ignorance, illiteracy and ill-health, and they do not regard an understanding of science and technology to have much to do with these aspects of their lives.

Nigeria, like many developing countries in Africa, Latin America and elsewhere, has been trying over the last two decades through its educational policies and programs to develop a widespread understanding of science and technology as part of the overall strategy for economic and social development and progress.

In primary schools, special periods have been allocated in the timetable for the study of science. In teacher training, a substantial part of the curriculum has included science. In secondary schools, all basic science courses have been offered, and the new 6-3-3-4 system really stresses the science subjects in no unmistakable terms. In some Nigerian states, special science schools have been established to encourage students to learn science thoroughly and properly. In addition, federal and state polytechnics have been created to provide opportunities for the study of science and technology.

Yet, a careful observation of these efforts reveals a lot of half-heartedness, incomplete commitment and perhaps a misunderstanding of the essential meaning of technological advancement.

A clear manifestation of this is the poor state of science teacher training and science facilities in the schools. To support Nigeria's aspiration to develop technologically, the teaching of science and technology must be reviewed and changed drastically such that those who teach and learn science and technology see the need to be committed to using science and technology rationally in day-to-day living. Gyuse (1985) has argued that even primary science education, when done properly, is sufficient to build a sound foundation for a meaningful technological take-off within the society at large.

Thinking Patterns Requisite for Science and Technology

Technology uses science and mathematics as basic knowledge. For this reason, identifying the mode of thinking favourable for doing science will greatly influence technological development. Ravetz (1971) claims that in third world countries, technology is widely considered as something that should take precedence over pure science. This is dangerous thinking because without the spirit of science, technology cannot be properly utilized. In the Western countries, science is seen as an ideology that can liberate humankind from ignorance, prejudices and false beliefs. Science, by enlightening the world, results in progress (Man Yuchi, 1982).

Science requires a mode of thinking which is unique to it. This thinking consists of a combination of a group of skills and a set of attitudes. The skills which are characteristic of the methods of scientific thinking include expertise in the processes of observing, questioning, identifying problems, communicating, measuring, classifying, formulating hypotheses, making inferences, predicting, experimenting and gathering and interpreting data. The attitudes which are requisite for the practice of good science include curiosity, honesty, objectivity, perseverence and respect for others' opinions.

Horton (1967) and Thijs (1983) point out that scientific endeavour must always function within the context of a culture and that a culture must have or must acquire certain traits, including values and beliefs, if the scientific endeavour is to flourish within it. Some of the vital ingredients in a culture in which science will thrive are:

(a) a society which sets value on the pursuit of knowledge for its own sake;
(b) the belief that the body of knowledge which a society has established is expandable;
(c) a tendency to resort to rational knowledge and a preference for reasoning over a merely intuitive way of understanding;
(d) the convictions that it makes sense to study natural phenomena instead of being afraid of them, that there are certain truths about the physical universe and that attempts to learn them are not illusory or futile;
(e) acceptance of science as being value-free, equating science with human progress and a belief that scientific knowledge constitutes a necessary condition for technological progress.

A society with these traits is properly described as a "science culture," and Western societies are generally of this kind. Other cultures which do not conform to the science culture have been described as "non-technologically oriented societies" (Ivowi, 1983) or traditional societies.

On the other hand, in any society which desires technological growth, there is nothing stopping it from acquiring these traits through teaching and training. For example, in the late 19th and early 20th century, the leadership of Japan decided that it was necessary for Japan to develop technologically. It reorganized its education and economic system, and it embraced industrialization and scientific modes of thought. Contemporary Japan leads the world in economic production, scientific discovery and technological development.

For a plan of a societal and cultural transformation, such as that which Japan underwent, to be successful, those undertaking the planning must carefully consider a number of factors, including (1) all relevant cultural processes of the society, (2) what a science culture can offer to the society and (3) what the total consequences might be for the inculcation in its people of a science culture. These considerations must be used in developing strategies for effectively teaching and training its people in the skills and attitudes of scientific thinking and technological development.

What cultural pressures and constraints might there be in Nigeria against the inculcation of scientific thinking and the enhancement of technological development? Chamberlain (1979) in a comprehensive study of junior secondary school children in Nigeria identified at least four constraints to science learning by the Nigerian child: (1) language, (2) space, (3) time and (4) subjectivity.

The language of instruction was not the first language of the child. This placed considerable strains upon the child, and Chamberlain concluded that the child would in all probability learn faster, with deeper understanding and with more confidence if taught in the mother tongue.

Spatial relationships as depicted in diagrams and pictures presented a difficulty for the child. Nigerian children tended to interpret diagrams and pictures as flat, two-dimensional representations, rather than as three-dimensional ones.

The concept of time presented a difficulty for the child. Others (Mbiti, 1969) have noted that within African cultures the concept of time is poorly developed in terms of being at a particular location when promised as well as meeting deadlines such as delivery of repaired goods, etc. The African philosopher succinctly describes this when he says "people set their minds not on future things but chiefly on what has taken place." The concept of the future is often viewed with fear rather than with anticipation, with excitement and with workable plans of what to do when it comes.

The tendency to describe and view natural phenomena in a subjective rather than objective way is a fourth constraint upon learning which Chamberlain identified. The Nigerian child tended to think in terms of self and how the self felt in association with the object rather than to discern the characteristics and functions of the object itself.

We might ask about the society at large. What constitutes cultural pressures and constraints on technological development? The impact of science and technology is presently two fold in Nigerian society. Science and technology, with all the accompanying comforts and easy life, are readily accepted and sought after in Nigeria. But science and technology as manifested in the life styles of the Western nations, with their values and attitudes and accompanying detrimental effects of technology, are widely feared and rejected by the masses. The areas where cultural conflict are greatest are in agricultural practices, health care, the use of medicines and drugs and the general sense of modernization within the home. In addition to the fear of modernization, a significant proportion of the population can not read and write. This constitutes a great problem in following instructions on household products and making appropriate use of machinery, appliances, medicines, chemicals and fertilizers.

In spite of the suspicion and fear of modernization, Nigerians can not deny or pretend to be unaware of the impact of science and technology on their every day existence. Whatever sphere of life one turns to, the impact of science and technology can be felt. Of all technological successes, the most outstanding one is probably the increase and stabilization of the food supply through the application of machinery and power, fertilizers, pesticides, hybridization and processing techniques (Urevbu, 1987). The human aspect of modernization includes a change in conceptualization of what constitutes quality in living. Transport and communication have improved. Leisure technology has been introduced, including electronic music, games, video machines and household appliances. Some of these have had disastrous effects. The consumers of these technologies need not only be informed, but be educated to bridge the gap between the traditional beliefs, values, orientation and the new technology. How does one go about bridging the gap between the traitional ways of life and technology?

Banjo (1971) noted that to reshape technological education in Nigeria, cultural changes are required. He warned that this requirement for cultural changes cannot be compromised if chaos is to be avoided. Let us consider for a moment some examples of familiar occurrences around us which are technologically related:

Case 1

A wealthy man desires to build a multi-storey apartment. To minimize costs, he uses poor quality concrete reinforcement in the foundations, and he does not realize the danger in which he places his investment. Four floors are built upon the weak foundations. He saves some money initially, but he pays for it later when the apartment collapses.

Case 2

A road construction contract is given to a man who knows nothing about engineering. He sublets the contract to yet antolther person, and finally the road is constructured. Stretches of the road which needed culverts were constructed without the culverts. The contract contains nothing about future maintenance. Everyone enjoys the tarred road for two years, then pot holes develop, lorries get stuck and sink in some of the water logged patches, and the road becomes a bigger hazard than before its construction.

Case 3

A new hospital is completed with new shiny equipment. Everyone is happily enjoying the new facility. But no inventory has been taken of the equipment, and no regard has been given to a schedule and budget for servicing and repairs. Soon, all of the new things become old, and every patient's life is in jeopardy because nothing is functioning properly.

These are all real life examples of how technology, when not maintained, can result in catastrophe, loss of lives and disillusionment with modernization.

There are many issues to be addressed in bridging the gap between traditional ways of life and science and technology. There needs to be some way of placing these issues in order of their priority. One way to do this is to examine the most pressing needs of the society, and one of the most pressing needs of Nigerian society stems from the need to use science and technology intelligently in everyday life. This need includes the use of science in the home in utilizing electronic appliances, medicines and chemicals. It also includes the use of science in the workplace in utilizing machinery, chemicals, equipment and materials of all sorts.

Intelligent use of science and technology requires re-education of Nigerian society as a whole. As of now, we have not reached the sophistication of the developed world in the sense that the majority of Nigerian consumers of science and technology is illiterate, caught up in the web of ill-informed use of scientific development and technological gadgetry.

The Need for Science and Technological Education

We as Nigerian science educators have a responsibility to organize a program which facilitates the depth of understanding which is required to make intelligent and well informed use of science and technology within Nigerian society. We need to start from the grassroots with our programs. We need a functional type of education in the homes. In most homes, individuals find it difficult to read labels and instructions on medicines, chemicals, appliances and equipment. In the market, traders buy and sell products about which they know little or nothing, for example, industrial salt which is clearly and boldly marked "NOT FOR HUMAN CONSUMPTION." Because it tastes like ordinary salt, traders go ahead and sell it, and buyers consume it, to the detriment of their health. Farmers need functional education in the use of fertilizers, pesticides, food preservatives and the technical knowledge requisite for mechanized farming. Above all, environmental education is needed. People need to know the sources of their drinking water and sources of contamination, such as human waste, animal waste and fertilizer wash offs. They need to know about the relationships among over population, over crowding, droughts and starvation. They need to know about the effects of pollution on health and life span, the effects of abuse of drugs, the effects of industrialization on longevity and the hazards of misusing science and technology. They also need to know about the ethical issues related to science and technology.

We as Nigerian science educators are aware of the many constraints within the society as a whole against accepting and using science and technology, not the least being the strong value attached to maintaining good relations and fulfilling obligations to family members and friends. Although the many cultures within Nigeria are very diverse, some common threads run through them. One of those common threads, it seems, is that quality and excellence in job performance can be easily waived if a friend or family member is involved in a project. Jobs may be given to friends and relatives rather than to the most competent person for the job. When it comes to employing individuals to teach, a lot of sentiment enters into the selection process. This strong attachment to family and friends has resulted in introducing a high level of corruption into all systems -- political, economic and educational. Many of the things which we consider to be ills in our society are also the causes of the obstacles to our technological advancement. The very idea of technological advancement will continue to elude us until we change many of our natural tendencies and until we learn the appropriate scientific culture and use it to apply science and technology rationally in our every day living. Not the least of these applications is the selection of people for positions on the basis of their expertise and merit, rather than on their kinship and friendship ties.

Conclusion

From the foregoing, it is obvious that there are many pressures and constraints in the Nigerian culture which conflict with the process of coming to know and use science and technology intelligently in day-to-day living and the work-a-day world. The most powerful of such pressures which militates against our intelligent use of science and technology is our culture and our attitudes. The question is, "What do we do to bridge the gap and how quickly can we bridge the gap?" Our future lies in science and technology. Science and technology are not only matters of products and processes. They also involve thinking processes and values. All of these are indispensable tools of modernization.

Nigerians need to undergo a transformation from a pre-science culture to a science and technology culture. We need to modify substantially our child rearing practices. The fact that children and adult thinking are different does not mean that children's thinking is inferior or should not be utilized. We need a substantial modification of our educational systems. The educational systems should be aimed more at raising general cultural levels rather than preparing elites whose work may isolate them from national realities. Priorities should be given to good primary and secondary education with special emphasis on technical, industrial and agricultural training and to the preparation of good science teachers. Teacher training should include examination of the issues of constraints on science learning, and prospective teachers should be prepared to help learners against this background. A new realistic policy on technology education is needed. Above all, the society as a whole should be kept aware of the innovations going on around it, and it needs to be kept informed of how it can use the innovations intelligently and rationally for the improvement of the society.

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An Educology of Teacher Professional Identity: Personal and Environmental Antecedents

Lya Kremer-Hayon and Chaya Kurtz
University of Haifa
Haifa, Israel

ABSTRACT

In accordance with the literature on professional identity and its effects on teacher burnout, the aim of the present study was to disclose some of the antecedents of professional identity. The Lewinian formula $B=f(PxE)$ guided the selection of the variables hypothesized to relate to professional identity. The selected environment variable was school organizational climate, and the personal variable was dogmatism. A group of 77 elementary school teachers, randomly selected from a larger teacher population, responded to three questionnaires: PRIS (Professional Identity Scale); SOCS (School Organizational Climate Scale); and the Rokeach Dogmatism Scale. Data analysis included a series of correlations and of regression analyses. The general findings point to a strong relationship between professional identity and school organizational climate. The latter explains the variance in professional identity to a statistically significant degree. Dogmatism and its interaction with school organizational climate were not found to be related to professional identity. However, findings regarding relationships between specific factors of the main variables do point to some relationships. Interpretations of findings, emphasizing the relative importance of environmental conditions as compared to personality characteristics, are put forward.

Perspective

Teacher professional identity has been found to be a statistically significant predictor of job leaving inclination (Hofman and Kremer, 1981) and to be related to teacher burnout (Kremer and Hofman, 1985). Both potential "drop-outs" and burnt out teachers present a major concern to educational policy makers and administrators. The former because of the vast resources invested in teacher education and the latter because of the on-going negative impact upon student population. Hence, the disclosure of professional identity antecedents appears to be of value from a theoretical as well as from a practical standpoint. Following the proposition that behaviour may be understood as a function of personality and environment variables, this study attempts to investigate the relationships between professional identity and two selected variables: dogmatism, a personality characteristic; and school organizational climate, a characteristic of the environment. Some elaboration on the study variables is in order.

In accordance with Miller's field theory conceptualization of identity (1963), *professional identity* is conceived of as a sub-identity in the intra-psychic area of multiple sub-identities which represent an intermediate layer between the personality core of the coping and defending ego and the periphery of the "persona" or presented self. Professional identity is conceived of as having four dimensions: *centrality*, its importance, meaningfulness and interconnectedness; *valence*, its value and attractiveness to people; *solidarity*, the readiness to share a common fate with one's peers; and *self-presentation*, the degree of willingness to present oneself to others with the appropriate professional label(Hofman, 1981). Accordingly, to be professionally identified with teaching means that the teacher perceives his or her profession (including all elements of the profession: knowledge, accountability, autonomy, ethical code, solidarity, an orientation towards pupils) to be of *central value* in his or her life. He or she wishes to share responsibilities with colleagues, experiences a feeling of belongingness to the peer group, and feels pride in his or her career as a teacher.

Dogmatism, a concept developed by Rokeach (1960), refers to the structure of a person's belief and disbelief systems and to the method by which attitudes are developed and changed. In evaluating new information, the dognmatic or close-minded person is influenced by irrelevant pressures and by the dictates of external accepted authorities. Information which does not adhere with previously developed beliefs is rejected. The existence of a single truth is cherished.

The openminded, relatively undogmatic individual, examines incoming information on its own merits and is relatively uninfluenced by irrelevant pressures and external dictates. While the time perspective of the dogmatic individual tends to be narrow and rigid, the relatively openminded individual lives within a more integrated continuity of past, present and future projection (Rokeach, 1960).

McCann and Fisher (1977) found a significant relationship between the degree of dogmatism and work satisfaction among teachers. The less dogmatic and more open the teacher, the greater the degree of job satisfaction. Similarly, student teachers low in dogmatism had more positive attitudes toward teaching (Bird, 1970; Cappeluzzo and Brine, 1969). The less dogmatic teachers have been found to be more ready to introduce innovative teaching methods. This is an ability which may add to the perceived attractiveness and meaningulness of teaching, which, as mentioned, are considered to be constituents of professional identity.

In his classical work on the relationship between the degree of dogmatism and sub-identities, Rokeach (1960) found a significant positive relationship between dogmatism and political and religious identification.

While professional identity is undoubtedly quite different from political and religious identification, one can hypothesize that the more dogmatic individual may require a less ambiguous and more clear-cut sense of identity in all major areas of the life sphere. Teaching has recently been found in the professional literature to be an activity which requires flexibility, adaptation of goals and materials to specific situations -- all attributes which do not congrue with a dogmatic attitude -- a rather dogmatic teacher may not identify with these functions. Consequently, his or her professional identity may be negatively affected.

This study will address the question of whether a relationship may be established between the degree of dogmatism and professional identity.

Organizational climate is typified by Hall and Schneider (1973) as the sum of the perceptions of individuals about their organizational environment, which reflect the interaction between characteristics of the organization and personality characteristics. In this interaction, the individual operates, via the perception of the climate as an information process which constitutes objective occurrences and characteristics of the organization as well as characteristics of the perceiver.

The construct implies that the perceived organizational climate is a cognitive entity which mediates between the behaviour of the organization as a whole and that of the individual. As emphasized by Friedlander and Margulies (1969), the organizational climate relevant for behaviour is that perceived by the individual.

Using this basic conceptualization, Halpin (1963) developed the widely used School Organizational Climate Questionnaire (SOCQ) to assess the perceived organizational climate. A variety of teaching and learning elements have been reported in a large number of studies too numerous to cite. In an extensive review of studies in this area, Fraser (1986) concluded that findings point again and again to the impact of environmental conditions on behaviour. The present investigation borrows from these studies in hypothesizing a relationship between school climate and professional identity.

Furthermore, balance theories, initially elucidated by Lewin (1935, 1955), conceive of behaviour as a result of the interaction between the intrapsychic characteristics and perceived environmental characteristics. Festinger (1957) and Heider (1958) perceive the individual as striving for balance between personality and attitudinal factors on the one hand, and environmental characteristics on the other. A state of imbalance leads to feelings of frustration. Hunt and Sullivan (1974) applied this conceptualization to the field of education and found that the performance of students and teachers was enhanced when the environment was compatible with the individual's abilities and attitudes.

Following the theories described in the previous sections, the set of questions addressed in this study is whether professional identity is related to dogmatism, to school organizational climate and to the interaction between the two.

Method

The study population consisted of a group of 77 elementary school teachers, all females, who had been selected randomly from a list of teachers in a relatively large city in Israel. Three instruments were used in the study for collecting data: (1) D-Scale, (2) SOCS and (3) PRIS.

The Dogmatism Scale (D-Scale, Rokeach, 1960) was developed to measure the open/closed belief system. It consists of 40 items cast into a seven-step Likert type response format with a potential score range of 40-280.

The School Organizational Climate Scale (SOCS, Zak, 1981) consists of 42 items and includes eight sub-scales. The figures following each sub-scale represent the number of items in each and its reliability (Cronbach's alpha score), respectively: Principal's Leadership Style (9; 0.88); Supervisor's Role (2; 0.73); School Services (4; 0.57); Innovation Adaptation (5; 0.64); Teaching Load (8; 0.66); Teacher Relationship (8; 0.78); Autonomy (5; 72); Prestige (2; 0.82).

The Professional Identity Scale (PRIS) was developed by Hofman and Kremer-Hayon (1981). It consists of 21 items on a five step Likert type format including the four dimensions mentioned in the previous section: Valence, Centrality, Solidarity, Self-Preservation, with Cronbach's alphas of 0.84, 0.67, 0.52 and 0.52 respectively and the total alpha scale of 0.87.

Results

The correlation between Professional Identity and Dogmatism was low and non-significant ($r=0.06$). The relationship between Professional Identity and School Organizational Climate was $r=0.43$; $p<0.0001$. In order to get more specific information, a series of correlation coefficients were computed between factors of Professional Identity and School Organizational Climate. These correlations are presented in Table 1.

Findings related to the total professional identity score indicate that only five of the eight climate factor scores yielded statistically significant correlations. These are the following, in descending order of the r's magnitude: School Prestige, Innovations, Autonomy, School Services and Supervision Role. The three other climate factors (Principal's Leadership, Teacher Relationships and Teaching Load) did not yield significant correlations. With the exception of Teaching Load, which yields a statistically ***negative*** significant correlation, all correlations are positive. This implies that the higher the perception of the organizational climate constituents, the stronger the professional identity. Statistically significant correlations were also found between several factors of professional identity and school organizational climates. They were as follows:

(1) *Centrality* with Autonomy, Prestige, Innovation Adaptation and with Teaching Load (the latter correlation was, as mentioned, in a negative direction);

(2) *Valence* with Supervision Role, Prestige, School Services, Innovation Adaptation;

(3) *Self-Presentations* with Principal Leadership, Supervision Role, Prestige, School Services;

(4) *Solidarity* with Principal Leadership, Prestige, School Services, Innovation Adaptation and Teacher Relationship.

As these correlations do not indicate any causal relationship, a series

Table 1: Professional Identity and School Climate

SCHOOL CLIMATE	PROFESSIONAL IDENTITY Centrality	Valence	Self Presentation	Solidarity	Totals
Principal's Leadership Style	-0.4	0.17	0.20**	0.20**	0.14
Superviser's Role	0.15	0.19**	0.20**	0.04	0.16**
Autonomy	0.27**	0.23**	0.20**	0.12	0.30**
Prestige	0.30***	0.33***	0.36***	0.37***	0.44***
School Services	0.18	0.33***	0.15	0.16**	0.27**
Innovation Adaptation	0.33***	0.39***	0.14	0.23***	0.39***
Teacher Relationships	0.05	0.13	-0.07	0.22**	0.11
Teaching Load	-0.26**	0.08	0.12	0.08	-0.06

** $p < 0.01$
*** $p < 0.001$

of regression analyses was computed, where Professional Identity served as the criterion, and Dogmatism, School Organizational Climate and the interaction between the later two served as predictors. Findings are presented in Table 2.

School Organizational Climate explained 18% of the variance in Professional Identity with a weight of 0.44. Neither Dogmatism nor the interaction between the two predictors explained the expected variance to

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any statistical significance. However, additional regression analyses where the PRIS subscale scores served as criteria, yielded more specific information. The variance in Centrality was explained to a statistically significant degree by autonomy, prestige and teaching load, as follows:

Table 2: Predictors of Professional Identity

PREDICTORS	r	R	% Explained Variance	Weight	F
Organizational Climate	0.43	0.42	18.0	0.44	15.83*
Dogmatism	0.05	0.43	1.0	-0.23	0.03
Interaction of Dogmatism and Climate	0.05	0.42	0.1	0.37	0.03

Autonomy (17% explained variance, beta weight 0.31,F=5.63, p<0.01);
Prestige (17% explained variance, beta weight 0.32, F=6.15, p<0.02);
Teaching Load (7% explained variance, beta weight -0.25, F=54.02, p<0.02)

The variance in Valence was significantly explained by Supervision Role, School Services, School Prestige and Innovation Adaptation, as follows:

Supervision Role (4% explained variance, beta weight 0.33, F=5.56, p<0.01);
School Services (11% explained variance, beta weight 0.34, F=8.98, p<0.001).
School Prestige (10% explained variance, beta weight 0.32, F=7.54, p<0.001);
Innovation Adaptation (15% explained variance, beta weight 0.41, F=12.30, p<0.001)

The variance in Self-Presentation was explained significantly by Supervision Role and Interaction between Supervision Role and Dogmatism, as follows:

Supervision Role (7% explained variance, beta weight 0.222, F=3.07, p< 0.05);
Dogmatism (7% explained variance, beta weight -1.02, F=7.90, p<0.001);
Interaction (8% explained variance, beta weight 0.89, F=3.07, p<0.001).

Solidarity was significantly explained by School Prestige, School Services and Innovation Adaptation, as follows:

School Prestige (13% explained variance, beta weight 0.38, $F=11.16$, $p<0.001$);

School Services (2% explained variance, beta weight 0.29, $F=3.02$, $p<0.05$);

Innovation Adaptation (5% explained variance, beta weight 0.25, $F=4.3$, $p<0.05$);

Teacher Relationship (4% explained variance, beta weight 0.23, $F=3.8$, $p<0.05$).

Discussion

Professional identity was not found in this study to be a function of the hypothesized interaction between the personality and environmental characteristics, probably due to the very low correlations between professional identity and dogmatism. Although the proposed hypothesis, that low dogmatism will be related to a high degree of professional identity was rejected, the proposition should not be entirely disregarded, because of the possible interference of high dogmatism, which may be also strongly related to professional identity.

The rationale for this additional proposition lies in the characteristics of high dogmatism, which among other factors, involves adherence and acceptance of values that are cherished and advocated by educational authorities. Hence a curvilinear correlation may be expected. This however must be verified by an additional investigation.

The relatively high correlations between the total scores of professional identity and school organizational climate point to a strong relationship between these two variables. This relationship is strengthened by the relatively large statistically significant portion of the variance in professional identity explained by school climate. The more specific findings reported in Table 2 provide some additional information regarding this relationship. Within the positive correlations, teacher relationship was found to correlated with only one PRIS factor, while school prestige correlated with all of them. This seems rather surprising, as school prestige may be regarded as an external rather than an internal element, while the opposite appears to be true of teacher relationships.

The latter might be expected to play an important role in professional identity, as it may serve the natural need to belong. However, this appears to be an indication of a general trend found in this study, which points to external elements (school climate) rather than to internal ones (personality characteristics) as affecting professional identity. It is also worthwhile to note that within the internal world of school climate, two factors that yield relatively high correlations with three out of the four PRIS factors are autonomy and innovation adaptation, two elements associated with progressive rather than with traditional education. The latter observation may be supported by the fact that principal leadership and supervision role, two factors associated with authority and traditionalism, do not correlate with as many PRIS factors as does autonomy. In sum, it appears that teachers' professional identity is associated with both external and internal factors of school climate. This does not necessarily point to any contradiction, especially in view of Kerlinger's proposition (1958), according to which educational attitudes are independent of each other.

Professional identity is a socio-psychological concept. While profession is a more sociologically bound concept, identity is more psychologically bound. The identification with one's profession appears however according to both previous and present findings to be strongly dependent upon environmental conditions rather than upon stable personality factors. From a practical point of view, to be considered by educational authorities and policy makers, this is rather encouraging, as environmental conditions, in the present case school organizational climate, can be changed relatively easier than personal characteristics and can serve to develop and support teacher professional identity.

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An Educology of Cognitive Behaviour Modification:

Applying Meichenbaum's Cognitive Behaviour Modification to Regular Education Students Exhibiting Inappropriate Classroom Conduct

Brenda H. Manning
University of Georgia
Athens, Georgia, USA

ABSTRACT

The intent of this report is to explicate the transferability of cognitive self-instructional (CSI) strategies to a similar (near generalization) and a dissimilar (far generalization) (to training) setting. Thirty grade 1 and 25 grade 3 children, identified by their classroom teachers as exhibiting inadequate self-management skills (i.e., inability to focus and maintain concentration) were randomly assigned to either a CSI condition or a control condition. At the completion of the eight hour treatment, the art teacher scored the teacher rating scale, Brown-Hammill Rating Profile Scale (BRP) *for each subject. In addition, a parent survey was conducted, and the parent* BRP *was collected from each mother. Independent* t *tests were computed between experimental and control groups for near generalization (art teacher ratings) and far generalization tests (mothers' ratings). There were across-the-board facilitation of the CSI instructional program. Explanations for why CSI transfer effects (near and far) were obtained in this study are suggested.*

Cognitive Self-Instruction for Elementary Education: A Test of Near and Far Generalization

In a recent study, cognitive behaviour modification (CBM) theory (Meichenbaum, 1977) was applied to a regular elementary education group. The results of this study are presented in the *American Educational Research Journal* (Manning, 1988). The purpose of this follow-up report is to explicate the transfer of CBM for first and third graders (years 1-3 in school or ages 6-8) exhibiting inadequate self-management skills. The self-management skills are defined as student alertness, self-monitoring, self-guiding, self-coping, self-evaluation and self-reinforcement during engaged academic time. Maintenance results were addressed in Manning (1988), however transfer of CBM strategies to similar and dissimilar settings has not been previously reported

Investigation of CBM transfer to settings other than the training setting is essential, due to the interdependence between learning and transfer This is stated very well by Brown, Bransford, Ferrara and Campione (1981:142-3)

> ... Development consists in part of going from the context-dependence state where resources are welded to the original learning situation to a relatively context-independent state were the learner extends the ways in which initially highly constrained knowledge and procedures are used .... Transfer tests also play a central role in the evaluation of educational programs .... Thus, the entire discussion of learning to learn is really a discussion of the importance of transfer.

Brown et al continue that if children fail to transfer learning, they have failed to learn The intent here is to report findings from the transfer data of CBM and to predict why the CBM treatment in this study produced impressive transfer results, when other such strategy training has not always done so (see Borkowski and Cavanaugh, 1979 for further discussion)

The CBM theory of behaviour alteration utilizes cognitive self-instructional strategies to guide and control behaviours This process follows Vygotsky's notion (1962) of the acquisition of self-regulating behaviour The majority of cognitive behaviour training has been applied in a one-on-one, tutor to tutee setting (e g , see Pressley's review, 1979) Success with CBM or self-instructional training in this setting suggests that it could be useful in applied settings such as regular classrooms Corno (1987) mentions the paucity of self-regulation studies conducted in actual classrooms She states, however that there has been an increase since 1983, and she gives some recent examples However, it is not clear whether these strategies transferred to similar and/or dissimilar tasks/settings

Most likely, the reason that this is not clear is embedded in the conceptualization of transfer Traditionally, *transfer* has meant "a bridge that joins skills and strategies acquired in a controlled setting (most often the laboratory) with learning and problem-solving activities in natural settings (such as the classroom)" (Borkowski and Cavanaugh, 1979:582) Transfer is usually seen as one subject's ability to apply laboratory learnings to an applied setting

This conceptualization promotes the thought that research conducted in applied settings (such as the classroom) does not necessitate a test of transfer In essence, the participants are taught *in* the transfer setting during the treatment

This researcher has taken a broader conceptualization of transfer as the ability of subjects trained together in groups of 12-15 in a regular classroom milieu to use these trained strategies to make near generalizations and far generalizations The near generalization is made in using the trained strategies in a similar setting, for example in a different type classroom (art room) with a different teacher (art teacher) This transfer is properly named *near generalization* because of the similarity between the trained setting and the near transfer test The far generalization is made in using the trained strategies in a dissimilar setting, for example at home. This transfer is properly named *far generalization* because of the dissimilarity between the trained setting and the far transfer test.

This broader conceptualization of *transfer* allows that classroom instructional research should also withstand or not withstand a high standard of evaluation, just as laboratory research has been expected to do. Indeed one of the major drawbacks of cognitive strategy training, such as CBM, has been the question of transfer. In some past studies where transfer was tested from laboratory to classroom (e.g. Parrish and Erickson, 1981) or task to task (e.g. Brown, 1978), the gains from cognitive strategies have not transferred to tasks/settings other than those of the experimentally dependent variables (also see Campione and Brown, 1977; Douglass, Parry, Martin and Garson, 1976; Guralnick, 1976). On the other hand, Bornstein and Quevillon's (1976) CBM research with three overactive preschoolers indicated a transfer to the classroom setting. Also Kendall and Braswell (1982), using a cognitive-behavioural condition, obtained generalization to the classroom, but not the home setting. Therefore, when narrowing the cognitive strategy training to just those including a behavioural element, such as CBM, the transfer results are mixed.

A strategy transfer paradigm was used to design this study. Not only were the subjects learning CBM strategies for specific situations; they were learning skills general enough to fit a variety of situations. In order for this instructional research to meet high evaluation standards, the CBM program was assessed in three ways by posing three questions: First, were instructed strategies maintained for a reasonable period of time beyond training (i.e. one month and three months delay)? Second, were these CBM strategies put to use with similar tasks/setting (near generalization)? Third, were these strategies applied to dissimilar tasks/setting without prompting (far generalization)? *Maintenance* refers to the continued use of an acquired strategy on a task identical to that used during training. Near generalization requires a minimal change in task demands (e.g. change of settings). Far generalization necessitates a substantial difference between training and generalization demands (Borkowski and Cavanaugh, 1979). If the CBM training in this study could be shown to be robust enough to maintain and transfer (near and far), then it clearly would meet high evaluation standards.

Meichenbaum and Goodman (1971) documented the efficacy of CBM for reducing impulsivity of young children. In the present study, these same self-instructional procedures were applied to first and third graders (years 1 and 3 in primary school) trained in a group classroom context. The dependent variables were (1) teacher ratings of classroom behaviours, (2) observer ratings of classroom on-task behaviours and (3) locus of control scores (Manning, 1988). In addition to these variables, the transfer variables were art teacher ratings and each mother's rating of home behaviour. In sum, the efficacy of CBM to improve the self-management of young elementary students (i.e., primary pupils) over time and settings was the focus of this study.

A brief overview of the CBM study including subjects, instruments, treatments, results and discussion is included. The results and discussion will focus on near and far generalization. The near generalization variable was classroom self-management during art lessons in the art room with a

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teacher other than their regular classroom teacher. The far generalization task was subjects' home behaviour, as rated by their mothers. Children who had a history of poor self-management skills were referred by their classroom teachers. Subjects were enrolled in grades 1 and 3, and each participated in one of two treatment groups. The subjects in one group were taught to use cognitive behaviour modification to improve classroom concentration. The control subjects received similar instruction, with the exception of cognitive self-instruction -- the salient CBM component in the experimental group. The treatment in both conditions was approximately 8 hours. The effects of CSI treatment were assessed immediately after treatment, and for one and three months delay (Manning, 1988). In addition, the effects of the CSI strategies were evaluated by each subjects art teacher and by their mothers.

Method

Subjects

Thirty grade 1 (mean age = 7 years, 1 month) and 25 grade 3 children (mean age = 9 years, 3 months) were identified by their classroom teachers as exhibiting inadequate self-management skills (e.g., shouting out answers, jumping up from their seats at inappropriate times, disturbing others, lack of concentration on school tasks), receiving no special services, with an intelligence quotient between 85 and 115. All subjects were from regular classrooms. Twenty-three percent of the grade 1 children and 21% of the grade 3 children from the same large elementary school in the Southeastern United States were referred. The grade 1 subjects were assigned randomly, 15 to the experimental treatment and 15 to the control condition. Twenty-five grade 3 subjects were assigned randomly to each of the two conditions, 13 experimental and 12 control. Combining the grades, the experimental group included 22 boys, 6 girls; 11 black children, 17 white children; 14 low socioeconomic status, 14 middle to high socioeconomic status. The control group consisted of 15 boys, 12 girls, 15 black children, 12 white children, 7 low socioeconomic status, 20 middle to high socioeconomic status. No attrition occurred during this study.

Measures

Pretreatment Measures. Classroom teachers completed the teacher rating scale of the *Brown-Hammill Behavior Rating Profile Scale (BRP)* (Brown and Hammill, 1983) for each subject. Baseline observations were made to ascertain whether children were on or off-task, with these evaluations made for 10-second intervals over a period of 30 minutes, with the final measure of time on task for a subject expressed as a percentage [number of 10 second intervals on task divided by the total number of 10 second interval samples (180)]. It proved possible for two raters to achieve very high inter-rater agreement (97%) for these ratings. In addition the *Nowicki Strickland Locus of Control Scale* (Nowicki and Strickland, 1973) was administered individually, with the items read aloud to the subjects. Comparisons between experimental and control scores using independent *t* tests revealed no significant differences on each of these three dependent variables (i.e., teacher ratings, observable behaviours and locus of control).

(see Manning, 1988 for these data).

Posttreatment Measures. All of the pretreatment measures were readministered. Inter-rater reliability for on-task ratings was 96%. During the last session, all of the experimental subjects were asked to use self-instruction for inhibiting, initiating and reinforcing appropriate classroom work habits (e.g. concentrating, listening). In short, they had to display the behaviours that were taught during self-instruction training. All of the post-treatment data were collected over a period of 10 days (see Manning, 1988 for these data).

Maintenance Measures. After one month and again after three months, all of the pretreatment measures were readministered. Inter-rater reliability for on-task ratings and delayed posttests were 98% and 97% respectively (see Manning, 1988 for these data).

Transfer Measures. The art teacher in the school completed the teacher rating scale of *BRP* for each of the subjects. A survey of home behaviours (Manning, 1988) and the parental rating scale of the *BRP* were given to mothers of each subject. Neither the art teacher or the mothers knew to which group (experimental or control) a particular subject was assigned. They remained treatment blind until after all data were collected. The art teacher's rating served as the transfer test for near generalizaiton of CBM. The subjects were still in the school setting, but in the art room, with a different teacher. There were similar classroom expectations (e.g. no shouting out, staying in seat to listen). The mothers' ratings served as the test for far generalization. The subjects were in a different setting than the training setting, with dissimilar expectations (e.g. hands up was not required for permission to talk at home).

Procedure

All of the first and third grade teachers at one elementary school were requested to refer children who lacked appropriate self-management skills for their ages. Ten target behaviours were evident from teacher referrals (i.e. inhibiting deficits -- shouting out, out of seat, daydreaming, playing around desk or room, disturbing others; initiatory deficits -- raising hand, staying seated, listening, concentrating and keeping hands, feet to self).

Teachers were told that their students would receive approximately eight hours of training in classroom management skills to improve the target behaviours. They were not told who was assigned to experimental or control, and they remained blind for the duration of the study.

Subjects were randomly assigned to either control or experimental groups. The 30 first graders and the 25 third graders were assigned as two separate groups. There were two groups each of grade 1 and grade 3 subjects.

Experimental subjects were instructed by the investigator in self-instructional strategies (Meichenbaum, 1977), twice per week, 30 minutes per session, for four consecutive school weeks. This time schedule was comparable with others using similar strategy training. Treatment occurred in regular classrooms, while students who were usually in these classes were in the art room, music room, or physical education classes. Treatment occurred in January and February for both experimental and control groups. A morning and an afternoon session were conducted on Tuesday and Thursday for four consecutive weeks for approximately 50 minutes each. Time of day for sessions was randomly counterbalanced across groups.

Treatments. An overall view of the scope and sequence of experimental and control conditions is found in Manning (1988). In short, the self-instructional cognitive training for the experimental group consisted of the following three major components: (1) adult and peer *modeling*, (2) subjects' *practising* CSI and (3) adult and subject *cueing* to use CSI. The control subjects were provided with the same experiences as the experimental participants except for the self-instructional strategy training. Control subjects received behavioural training with a focus on compliance to classroom rules. Experimental subjects received cognitive and behavioural training with a focus on self-management. Both groups were taught by the same investigator.

At the completion of the training, the following week, the art teacher at the school completed the teacher rating scale *BRP* for each of the 55 subjects. At this same time a parent survey of home behavours and parents' rating scale *BRP* were sent home to be completed by mothers. Due to the classroom teachers' requests, the mothers returned the survey and scale at a 100% rate. The art teacher and mothers were allowed one week to return the assessments.

Results

The significance level of 0.05 was chosen, and null hypotheses were assumed for all transfer tests between experimental and control groups. Independent t tests were computed between experimental and control groups for near generalization test (art teacher ratings) and far generalization tests (mothers' survey and *BRP* rating scale). Please refer to Table 1 for the results of each t test comparison.

Near Generalization: Art Teacher Ratings

Art teacher ratings were positively affected by the CSI treatment. Overall, there was a large effect size ($rpb = 0.78$) based on treatment.

Far Generalization: Mothers' Survey and Ratings

The parent survey, developed by the investigator to gather qualitative responses of parents to the CSI treatment, has no established validity or reliability. Therefore a standardized instrument, the *BRP*, was used for parent responses. Nevertheless, it was decided to report both assessments because together they provide an even stronger case that there were across-the-board effects of the cognitive self-instructional program. Together the two represent convergence of effect for CSI on far

	n	*M*	*SD*	*t*	*p*	*rpb*
		Near Generalization **Art Teacher -- *BRP* Ratings**				
Experimental	28	12.33	1.64	9.08	<0.001	0.780
Control	27	8.53	1.45			
		Far Generalization **Mothers' Survey**				
Experimental	28	9.11	3.34	5.16	<0.001	0.578
Control	27	4.82	2.78			
		Far Generalization **Mothers -- *BRP* Ratings**				
Experimental	28	11.98	2.02	12.53	<0.001	0.865
Control	27	6.01	1.45			

Table 1:
***t* Test Results for Experimental vs. Control Group**
for Near and Far Generalization Test of CBM:
Art Teacher and Mothers' Ratings

generalization settings. The effect size ranged from moderate (*rpb* = 0.578) for survey to substantial (*rpb* = 0.865) for *BRP* rating scale.

Discussion

This report was designed to evaluate the transferability of CBM, especially the CSI component, to near and far generalization settings. There was across-the-board facilitation due to CSI training, both for near generalization settings (art classroom) and far generalization settings (home). The treatment condition that included CSI proved better, regardless of setting, than an intervention that was parallel except for its lack of emphasis on self-instruction. This piece of research adds to the growing body of literature on cognitive interventions (e.g. Corno, 1987; Kendall, 1984) which documents that children can be taught to produce self-instructional mediators that promote regulation of behaviour.

It is encouraging that transfer effects of CSI training were obtained here, and that it was possible to have an impact on self-management skills, which are perceived as extremely desirable by parents and teachers.

However, the question still remains why impressive near and far generalization results were obtained in the present study, while other studies have not documented transfer (e.g. Guralnick, 1976).

The following reasons are offered as suggestions. First, recommendations from others such as Borkowski and Cavanaugh (1979) and Brown et al. (1981) who are concerned about strategy transfer were integrated into the design of the current study. These precautions were implemented in the following ways:

(1) a variety of classroom and home situations were used in order to train directly CSI generalization skills;
(2) the role play situations were familiar to the subjects and were adapted from the normal curriculum;
(3) training was extensive, covering a period of one month, rather than a single session or two;
(4) multiple training sessions were separated by a few days, rather than training during a single session or multiple tasks on a single day;
(5) fading of experimenter cues was used;
(6) original, as well as rote, overt self-verbalizations were practised by each subject;
(7) repetition and review were a part of each session;
(8) subjects were actively involved and participated in role-play situations; subjects served as a model for CSI for their peers (teaching a peer seemed to increase retention of the CSI process);
(9) age-mates or older peers (via a videotape) were engaged in modeling CSI for the target behaviours;
(10) investigator feedback, both positive and corrective was applied extensively, especially when subjects generalized spontaneously;
(11) game-like learning was used (e.g., Concentration Thief) to teach subjects how to use CSI for a variety of distractors;
(12) stimuli common to the near transfer test (e.g. the art classroom) were also present in the training setting);
(13) inoculation procedures were a part of the training session (i.e., noise and distractions in the near generalization setting were also a part of the training session -- intercom, visitors to classroom, etc.);
(14) cooperation among subjects, rather than competition was emphasized;
(15) cue cards were used to remind subjects to inhibit inappropriate behaviours, initiate and reinforce appropriate behaviours during, between and after training sessions.

From these 15 recommendations, three major components emerged to constitute a regular elementary education program for teaching cognitive self-instruction. These components are *modeling, practising* and *cueing* (Manning, 1988; Manning, in preparation). In light of the impressive results of CSI being documented by others and here, the time seems right to test such a CSI program systematically in the context of the regular elementary classroom.

In addition to these plausible reasons for transfer, other considerations are that these subjects were selected from a regular education population with average intelligence, while the vast majority of cognitive behaviour modification research has employed a special education population (e.g. Meichenbaum, 1977). Another explanation may be that the instructor/investigator had extensive classroom teaching experience in working with children who were the same age as the subjects in this study. Additionally, the subjects were trained in groups of 12-15, and they learned from each other as well as the investigator.

Drawing from previous research illustrating successful transfer, Bornstein and Quevillon (1976) credit the teachers' raised expectations for the treated children as the reason for their impressive generalization. This could not have been the case here due to the treatment-blind teachers. However, Kendall and Braswell (1982) provide a possible and reasonable explanation when they credit the context focus. In training, they focused on classroom behaviour, but not home behaviours. Their transfer effect was to the classroom, but not to the home.

In the present study, role play situations included the classroom focus mainly; however, there were some home situations discussed and role-played using CSI. Due to the factors named above, transfer of CSI to another classroom and to homes was made more probable and indeed occurred.

Future research will be confronted with the challenge of discovering which of these factors were essential. However, it is my prediction that instructional research such as this will necessarily remain complex, as it mirrors the complexity of the teaching-learning process. This will make it essential, then, for educological researchers to provide rich detail of the complexity, rather than expending energy looking for simplification, and perhaps oversimplification.

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An Educology of Classroom Discourse:

How Teachers Produce Coherence in Classroom Discourse Through Managing Topics, Interactive Tasks and Students

Lynn McCreedy and Carmen Simich-Dudgeon
Centre for Applied Linguistics
Washington, DC, USA

ABSTRACT

The database for this study consists of videotaped third and sixth grade mathematics and science lessons, augmented by structured ethnographic observations and interviews. Data collection was carried out in two culturally diverse elementary (primary) schools in the Fairfax County, Virginia, public school system. Observations of mathematics and science lessons were conducted in three third grade and three sixth grade classes, from May-June, 1986, and October-March, 1987. Interviews were conducted in May, 1986, to elicit students' and teachers' metacognition about the functions and standards for questions and responses in the classroom. In March, 1987, 8 lessons were videotaped: two third grade mathematics lessons, two third grade science lessons, two sixth grade mathematics lessons and two sixth grade science lessons.

Segments of the videotaped lessons were selected for detailed discourse and interactional analysis, which yielded information on several aspects of the coherence of these discourse segments, including textlinguistic and interactional factors. The particular segments of classroom discourse which were considered were Verification of Learning activities (VOLs). These are face-to-face verbal interaction segments during lessons when the teacher verifies (and the student must display evidence of) learning.

It was found that in order to participate successfully in VOL Interactive Tasks, students must be able to discern the teacher's intentions by interpreting the teacher's cues. In VOLs, the purpose and direction of the communicative interaction are to a greater or lesser extent (often entirely) determined by the teacher.

If a culturally different student misunderstands the purpose of the activity, or encounters trouble in following the organization of the interaction, nobody is likely to succeed: neither the student's response, nor the teacher's attempt to verify learning.

It is therefore particularly important that nonnative English speaking students understand their responsiblity for previously learned information and how to provide this information on cue. Teachers need to structure

their VOLs clearly by providing ample and explicit framing to the VOL and the Interactive Tasks comprising it.

Introduction

Most of the communication which goes on in classrooms is managed by the teacher, as a routine matter. But while this management may be routine, it is far from simple. It involves taking into account such diverse considerations as subject matter, teaching tasks and methods, and, of course, the students with (and for) whom the communication takes place. In this study we explore the question of how teachers manage considerations of discourse topic, interactive task and students' participation to produce coherence in classroom discourse. We intend both a descriptive and theoretical contribution. As a description of classroom interaction, it adds to our knowledge of how classrooms work, and in particular, how verbal review question/answer exchanges in third and sixth grade mathematics and science classes work. As a theoretical contribution to the newly coalescing body of knowledge in educological linguistics, it advocates a discourse-interactional unit of analysis, the Interactive Task (IT), for the study of questions in the classroom.

The database for this study consists of videotaped third and sixth grade mathematics and science lessons, augmented by structured ethnographic observations and interviews. (Third and sixth grade are the third and sixth years of school with children of about ages 8 and 11 years.)

Data collection was carried out in two culturally diverse elementary schools in the Fairfax County, Virginia, public school system, as part of a larger study funded by OERI as a project of the Center for Language Education and Research (CLEAR). The CLEAR's main goals are to determine what makes a student an effective communicator/responder and to make that information applicable to non-native English speaking students who have recently been placed in mainstream classes. Observations of mathematics and science lessons were conducted in three third grade and three sixth grade classes, from May-June, 1986, and October-March, 1987. Interviews were conducted in May, 1986, to elicit students' and teachers' metacognition about the functions and standards for questions and responses in the classroom. In March, 1987, 8 lessons were videotaped: two third grade mathematics lessons, two third grade science lessons, two sixth grade mathematics lessons and two sixth grade science lessons.

Segments of the videotaped lessons were selected for detailed discourse and interactional analysis, which yielded information on several aspects of the coherence of these discourse segments, including textlinguistic and interactional factors.

The particular segments of classroom discourse under consideration here are those which we have named *Verification of Learning* activities (VOLs). These are face-to-face verbal interaction segments during lessons when the teacher verifies (and the student must display evidence of) learning. While VOLs may be verbal or written or both, the type we are analyzing here is the verbal VOL consisting of a series of elicitation-response-evaluation exchanges. This type of VOL has been given various educological names, for example *verbal review*, *oral quiz*, *Socratic method* and *recitation* (Gall, 1984; Dillon, 1984:50-51). Our purpose in proposing the term *Verification of Learning* is twofold: first, to recognize that elicitation-response-evaluation exchanges occur in sequences as a distinct activity during lessons; and second, to express the functional link of this activity with other non-elicitation ways in which teachers verify learning (e.g. homework, games, manipulatives, etc.). We also recognize that all of these activities have instructional value and that the relative salience of the instructional vs. evaluative function will vary circumstantially and according to the goals of the teacher.

The VOLs with which we are most concerned here consist of one or more Interactive Tasks (Simich, 1984), each of which consists basically of one or more topic-centred elicitation-response-evaluation exchanges. Interactive Tasks do not exist simply as components of classroom recitation sessions, but are characteristic of face to face communication in general. However, in the classroom, and in the VOL in particular, Interactive Tasks such as defining, naming, exemplifying, or predicting are joint teacher-student communicative work which the teacher manages. We will demonstrate how the teacher structures Interactive Tasks and the VOL discourse as a whole, by asking particular questions at particular times, thus managing the topical content and interactional aspects of this type of classroom discourse simultaneously.

The specific issues to be addressed here are:

1. The usefulness of the Interactive Task (IT) as a unit of classroom discourse analysis. We will show how our approach builds on, yet differs from previous analyses of classroom discourse. The usefulness of IT-based analysis is to be demonstrated by this research report as a whole, as an example of Interactive Task based research, rather than being discussed as a separate issue.
2. The ways in which the educological purposes of classroom interaction during VOL segments affect their discourse-interactional organization.
3. Topical and interactive linkages within and between Interactive Tasks and the specific markers of communicative intention used by teachers and students to signal these linkages.

Purpose and Structure in Classroom Communication

The particular type of classroom communication of interest here has already received much attention from several perspectives. Much of the previous research has been based on quantitatively analyzed observation, which focused on the nature of teachers' questions, their functions and the effects on students' responses and on learning (e.g. Dillon, 1984; Gall, 1984; Brophy, 1986; Sinclair and Coulthard, 1975). While such studies have yielded important information on teachers' questions, the fact they describe teachers' questions and students' responses in isolation has meant that they do not present a full description of face-to-face academic communication between teachers and students. This limitation has, in fact, been recognized by a leading proponent of this approach.

> To develop more useful information about cognitive level of question, researchers

> will have to ... take into account the teacher's goals, ... the quality of questions, and their timing and appropriateness given the flow of activity. Such research will require a shift from the individual question to the question *sequence* as the unit of analysis. [Brophy, 1986:17]

Examining sequences of teachers' questions (and what follows upon them) yields-more useful information not only about the cognitive level of questions, but also about the nature of classroom verbal interaction as a means through which learning takes place. Consider the following exerpt:

Teacher: What do we do, then .. What's the next thing ... What do we add?

Student: Look at the fractions next.

Teacher: What do.

Student: You add the:, um .. the one and the one.

Teacher: Okay

And can I do that?

Student: Yeah.

Teacher: What's one and one?

Student: Two?

Teacher: Okay.

*Glossary of Symbols (Transcription conventions used throughout this report are as follows):

- .. - short pause
- ... - longer pause
- parentheses around words - partially audible
- (________) - inaudible utterance (or portion thereof)
- colon after sonorant (e.g., the:, little:) - lengthening
- two utterances bracketed together - overlap
- two utterances bracketed with top bracket pointing left - near overlap
- [ ] - added by the authors.

This excerpt illustrates the dynamic -- yet structured -- nature of classroom verbal interaction. First of all, what the teacher means by her initial (self-paraphrased) request for factual information cannot be fully understood except within the context of the larger lesson activity, which in this case was a sixth grade mathematics review activity. Several aspects of the teacher's initial elicitation are uninterpretable out of context, not only such genral meaning words as *do* and *thing*, and the deictic *next*, but why she would be eliciting something as seemingly trivial as the calculation "1+1" from sixth graders. But within the context of the review activity -- in which the class worked through a mixed number addition problem, in order to review the steps involved -- the elicitation makes sense. Second, the "answer" is obviously co-constructed between the teacher (who coaches and positively evaluates the student) and the student, in a series of question-response-evaluation triads. The student's follow-up responses at times overlap with those of the teacher, without breaking the rules of conversational engagement (Sacks, Schegloff and Jefferson, 1974).

Analyses of classroom discourse which attend to the communication *only* from either an interactional or a discourse-analytical standpoint do not present as complete a picture as they might, since the same educological and situational factors are relevant to both analyses. One possible method of addressing both discourse organization (textlinguistic and topical) and interactional organization (micro-sociological factors such as turn-taking, proxemics and nonverbal communication) is to perform two or more completely separate analyses on the data. McDermott and Dore (1982) take this approach, and Schiffrin's model (1987) also advocates it.

We have chosen to treat discourse structure and interactional organization together, using units of analysis which have allowed us to perform a *single unified analysis* of both discourse (textlinguistic) and interactional factors. These units of analysis are the *Interactive Task* and the *move*. Although the discussion of our analysis will at some points focus on interactional aspects of the data and at others on textlinguistic aspects of the data, the units of analysis remain constant, and they give our approach a unifying reference point.

Interactive Tasks Comprising Verification-of-Learning Activities

The Interactive Task as a unit of classroom discourse-interactional analysis was initially developed in Simich's (1984) study of the sociolinguistic structure of science and art lessons in a multicultural sixth grade classroom. Focusing on how academic knowledge is verbally conveyed by students and verified by the teacher, she observed that this tended to occur as a "phase" (Mehan, 1979) or segment of the lesson, marked by teacher-led transitions to and from this activity and other sociolinguistic conventions which differentiated these Q/A sequences from questions and answers during other phases of the lessons. She named this activity the *Verification of Learning* activity, or *VOL*. Within the VOL, the most salient discourse-interactional organizer was named the *Interactive Task*, "a conversational exchange between the teacher and a student where a cooperative effort from the participants is essential for the successful initiation, maintenance and resolution of the task" (Simich, 1984:143).

The Interactive Task (IT) is a synthesis of the concepts of "communicative task" (Gumperz, Kaltman and O'Connor, 1984) and "interactive episode" (Cook-Gumperz and Corsare, 1977). The concept of IT applies the meanings of these concepts to verbal interaction during VOL activities. Gumperz, Kaltman and O'Connor's (1984) communicative task is both a descriptive name and a unit of analysis. A given type of communicative task is characterized by its own particular "recurrent, general interactive intention" (p. 9). Examples of types of communicative tasks which differ from one another according to their function are narrating, describing, explaining, emphasizing, justifying, arguing and expressing feelings. The interactive episode is a similar interactive unit of analysis identified by Cook-Gumperz and Corsaro. It is related to Goffman's (1963) concept of "encounter" and "face engagement," a *mutual activity* maintained through participants' joint "focus of cognitive and visual attention ... entailing preferential communication rights" (Goffman, 1963:89, quoted in Cook-Gumperz and Corsaro, 1977:13). Cook-Gumperz and Cosaro extend Goffman's concept of face engagement to apply it to children's communication in a nursery situation. Interactive episodes "begin *only* when children go beyond mutual acknowledgement and initiate or propose some mode of activity or definition of the situation which serves as the beginnings of mutual activity;" they "end with physical movement of interactants from the area which results in the termination of the originally initiated activity" (Cook-Gumperz and Corsaro, 1977:13-15). The interactive episodes these researchers studied were between (or among) preschool children engaged in playing/learning activities which were far less structured than Verification of Learning activities. Communication within these units, however, tended to focus on (and help accomplish) the mutual activity at hand.

Like interactive episodes and communicative tasks, Interactive Tasks are a type of encounter or face engagement (Goffman, 1963) in which a mutual activity is accomplished interactively.

Our analysis of VOL Interactive Tasks also owes much to the work of Mehan (1979). His sociological study of communication in an early elementary classroom was one of the first to delineate the structure of classroom activities, in terms of the structure of lessons, and also the functions and organization of the turns-at-talk within lessons. We have made particular use of three of his concepts: (a) the initiation-reply-evaluation exchange; (b) the extended sequence of interaction; and (c) classroom communicative exchanges as social acts, in the sense of G.H. Mead (1934, cited in Mehan 1979:63). Concerning this last point, Mehan (1979:64) compared classroom communicative exchanges with Mead's example of a prototypical social act, a "conversation of gestures," in which one person initiates the social act by pointing, and another person completes the social act by looking in the direction of the points. The act of pointing has "prospective meaning," but the meaning of the social act as a whole can only be determined retrospectively; "the completion of the social act provides the meaning of the gesture that started the act" (Mehan, 1979:64). In classroom communication,

> The meaning of an [elicitation] act initiated by the teacher, for example, is prospective. Its actual meaning is realized retrospectively, when the act performed by the student [the student's response] is evaluated by the teacher. Likewise, the status of a student's reply as answer or nonanswer is not determined until the teacher contributes an evaluation. [Mehan, 1979:64]

The differences between prospective and retrospective meaning of teachers' elicitations, then, is basically a difference between the elicitation's potential meaning and function, and the meaning and function it actually ends up having. This distinction is an important one to bear in mind when considering the classification of teachers' elicitations according to cognitive level (e.g. as "fact" vs. "higher cognitive," Gall, 1984). Because teachers' elicitations function to initiate social acts (of a sort which we call Interactive Tasks) which require students' cooperative participation for their completion, and which can only be fully understood retrospectively, the entire social act must be examined if the elicitation is to be classified accurately. Neither the syntactic form of the elicitation, nor its prospective meaning and function alone can suffice. Our analysis of teachers' elicitations and their language/interactive functions is based on the consideration of the social act within which they occur, that is, the VOL Interactive Task.

Mehan analyzed all of the communication in the classroom he studied as comprised of linked three part exchanges. The exchange begins with an initiation of some sort, whether it be a question from a teacher or a student, a complaint from one student about another's behaviour, a directive to the class to put away materials, etc. The initiation elicits some sort of reply. The reply is often acknowledged by the person who began the exchange with an evaluation of that response. Any of these communicative moves (Goffman, 1981) may be verbal or nonverbal. Evaluations by the teacher may be implicit or explicit. For example, the teacher may have established a convention that flicking the lights off and on is a signal to the students to be quiet (a nonverbal initiation). When the class quiets down in response to this signal, the students are giving a collective nonverbal reply. The teacher's evaluation of their reply would be the "good" in the following: "Good. Now, let's take out our mathematics homework and go over it, and then we'll play 'Around the World.'"

Although it may be argued that the "initiation-reply-evaluation" sequence does not accurately describe all classroom communication (Griffin and Humphrey, 1978:68), it certainly is applicable to the Verification of Learning phase of lessons. VOL Interactive Tasks minimally consist of one of these three part exchanges. The teacher's elicitation is virtually always the initiation move. Here is a typical example of a minimal VOL IT. This interaction occurred in a third grade mathematics lesson, in which the VOL topic was the multiply-add sequence:

Teacher: Very good, Robert. All right, the next one, Tammy.
Tammy: Um, six plus five equal eleven.
Teacher: That's good, Tammy. Now, the last one, Henry.

In the first turn-at-talk, the teacher accomplishes two things. First, she positively evaluates the previous response, thereby closing that IT, and she initiates a new IT by directing Tammy to perform the next calculation. Following Goffman (1981), we will consider this turn-at-talk to consist of two different moves. The second turn is Tammy's one-move response. The third turn-at-talk has the same move structure as the first teacher turn. It is an evaluation/closure move followed by an IT opening move. Note that both IT openings are marked as such by the markers *all right* and *now*.

There may be, interestingly, a grade-level difference in how teachers evaluate responses. While all the teachers whom we studied preferred to avoid rejecting problematic responses, they differed in their ways of accepting correct responses. The four third grade teachers always gave an explicit evaluation, and when the response was accepted, it was often accepted enthusiastically, e.g. "Okay!" "That's wonderful!" "Super!" The three sixth grade teachers did not always explicitly evaluate every response, sometimes simply redirecting the task if the response was wrong or moving on to the next question if the response was right. Having studied only seven teachers, we cannot claim that this is a difference based on grade level rather than teaching style, but that would be one plausible explanation. Third graders are less experienced in the rules of class participation, and teachers may want to reinforce rule-following by giving praise to correct answers given in turn. By the sixth grade, VOL Interactive Tasks are more routine, and the teacher can rely on students' background knowledge of Interactive Task structure to interpret zero evaluation as an indication of an acceptable response in a given case. If this interpretation is correct, it has implications for LEP students. Those LEP students coming into American schools at higher grade levels need to be taught how to recognize and interpret zero evaluations, perhaps as part of ESL instruction.

The Extended IT and Mehan's "Extended Sequences of Interaction"

Although a positive evaluation move often does close an Interactive Task, it need not necessarily do so, as the following example shows:

Teacher: Excellent .. good listening today. All right, what's our next step .. Megan?
Megan: Um .. look at um the whole numbers? Subtract them?
Teacher: Look at those whole numbers.
And subtract them. How'd you know to subtract them, Megan?
Megan: 'Cause I looked at the sign?
Teacher: Good.

The above is an example of an extended IT consisting of two sets of three-part exchanges. The teacher initiates the IT during the first turn-at-talk ("All right, what's our next step ...") and nominates Megan to respond. Megan responds using rising intonation contours. The teacher repeats Megan's response overlapping her response and using lower intonation contours, signalling acceptance (positive evaluation). Rather than ending the Interactive Task, the teacher continues it with a follow-up, "How'd you know to subtract them, Megan?" It is of interest to consider why the teacher extended the IT, since Megan's response was accepted and the Interactive Task, as originally set by the teacher, could have been considered completed. But Megan's use of rising intonation to respond signalled insecurity. The "How'd" follow-up form functions as a "why" elicitation. The teacher asks, "How'd you know to subtract them, Megan?" Megan answers, "'Cause I looked at the sign?" Note again her rising intonation. The teacher gives a positive evalution, "Good," and ends this IT.

Mehan's data apparently contained no interactions quite like this one, in which the Interactive Task is extended not because the student gave an unacceptable answer to the original elicitation, but for other educological reasons, perhaps to assure the teacher that the correct answer was not merely gussed at. Mehan's "extended sequences of interaction" are extended ITs in which follow-up elicitations resolve problematic responses. His analysis found that this was done by "prompting replies," "repeating elicitations" and "simplifying elicitations" (Mehan, 1979:54-62). While our data confirm that teacher-student exchanges are extended to resolve what the teacher deems to be problematic responses, we found many indeterminate examples, such as the one above, and also several examples of extensions of the interaction in which the sutdent was required to expand the prospective meaning/function of the IT through explanation, exemplification or application of the lesson material covered in the initial elicitation. Thus, while Mehan's notion of "extended sequence" has some applicability to our data, we found that it was most useful in indicating the appropriateness of keeping our definition of the Interactive Task flexible, in terms of its length.

We prefer the Interactive Task as a unit of analysis to Mehan's I-R-E sequence and extended sequence of interaction (even if it were redefined to include nonresolving follow-ups as well as resolving follow-ups) because we see the I-R-E sequence and the extended sequence of interaction as basically the same sort of interaction, a single type of unit in classroom discourse. Further, especially in Verification of Learning Activities, the term Interactive Task is more accurately descriptive of these interactions. Teaching tasks are addressed through teacher-student interaction, and the interaction is complete only when the teacher feels that the task has been adequately addressed.

Educological Functions and Participants' Roles in the VOL IT

Because Interactive Tasks in VOLs occur between interactants of unequal status (teachers and students), teacher-based considerations determine several of their general characteristics: when and how they are opened; which students respond as interactants; that virtually all student responses are evaluated; and when and how they are terminated. Through his or her elicitations, the teacher controls important aspects of the IT, principally the topic selection, scope and student verbal participation. Teacher elicitations "call for respondants to provide factual information, opinions, interpretations of academic materials or provide the grounds for their [the respondants'] reasoning when they reply" (Mehan, 1979:44). The student's principal responsibilities are to have knowledge of specific IT content and to act upon the teacher elicitations.

The educological function of the VOL/IT can be defined in terms of its function within the VOL and its function as an interactive unit. Each IT shares the larger VOL function which is to perform collaborative interactive work for the purpose of verifying (teacher) and conveying (students) knowledge. Individual ITs constitute individual interactive units, each developing topic-related elicitations under the larger VOL content topic. Educological considerations determine IT closure. When the teacher feels that a particular Interactive Task has been adequately addressed, he or she can initiate a new one, but inadequate responses normally dictate follow-ups to the initial elicitation, and extensions of acceptable responses also occur.

Our exposition thus far has defined and exemplified the VOL Interactive Task. We have briefly illustrated how the teacher affects the VOL IT topical development, maintains its progression and terminates the interaction on each specific task by selecting from a range of IT move types. Next, we will consider how the moves in turns-at-talk in VOL ITs affect their topical development.

Topic Management in VOL Interactive Tasks

Once the topic of the IT has been established (usually in the opening elicitation), the teacher's choices of IT move-type determine that IT's topical development, and these choices are available whenever he or she has a turn-at-talk. These choices can be characterized as "topic-bound" and "topic-expanding." The categorization of follow-up elicitations by topic treatment has to do with whether, in the course of those elicitations, the original topic of the IT is reinforced with further factual detail (in "topic-bound" moves) or expanded with application or interpretation of the facts (in "topic-expanding" moves).

Topic-bound moves, as their name implies, are follow-up elicitations related to the IT topic (old information) and are mostly related to factual recall/factual information question types. Topic-bound elicitations may be preplanned by the teacher, as, for example, a request for a mathematics term as a follow-up to a calculation response. Topic-bound elicitations are also used as "resolving follow-ups," to backtrack to a more certain point of student understanding when a student's initial response is unacceptable. Examples of topic-bound moves are requests for repetition, reporting, factual description, or definitions. The following segment exemplifies IT topical development through a combination of preplanned and resolving topic-bound choices.

This segment is from a sixth grade mathematics lesson. The topic of the VOL is steps in adding/subtracting fractions. The VOL consists of at least eight ITs, which are *not* derived directly from homework, but rather from a teacher-led review.

Teacher: (1) What I'd like to do before we begin our lesson today is to review what we do when we have to add or subtract fractions. Let's look at box 1. Seven and 1/8th minus 2 and 3/8ths. What's the first thing you would do .. if you had to .. solve that problem. Soeka.

Soeka: (2) Look at the denominators?

Teacher: (3) You would look at the denominators? Anybody do anything different? John, what would you do?

John: (4) I'd look at the fractions.

Teacher: (5) Why would you look at the fractions .. Why is it a good idea to look at the fractions?

John: (6) Because they're the first things you add together.

Teacher: (7) O.K. Look at problem 4 in your four squares, 22 minus 18. Would you look for fractions there?

Soeka: (8) No.

Teacher: (9) Oh .. If I were solving that problem I think I might. [No pause] You know why? 'Cause what if they stuck one in, and I didn't see it, what would I have to do?

John: (10) Go back.

Teacher: (11) Why would I have to go back, John?

John: (12) Because then your first step would be wrong.

Teacher: (13) See? If I start just automatically with those whole numbers, my first step is wrong.

In this segment (the beginning of a mathematics VOL), the teacher reviews the steps for adding and subtracting fractions. The teacher has chosen topic-bound elicitations (moves) which are appropriate to elicit factual information from her students. Follow-up elicitations (5) and (11) are interesting because they have a surface marker (why) that is thought to involve higher cognitive thinking (Shuy, 1986), though they entail factual recall in this example.

Lots of other interesting things are going on in this interaction. The teacher's repetition (turn 3) of Soeka's response (turn 2) with rising intonation implies non-acceptance, whereas falling intonation would have implied acceptance. Soeka's response is not actually inaccurate, but leaves implicit some things which the teacher wanted explicitly stated. Looking at the denominators presupposes that there *are* denominators, which in turn entails that there are fractions; the teacher wanted to begin with the issue of fractions. Thus, Soeka's notion of what constitutes "a step" does not match the teacher's. Note that even John's contribution (turn 4), "look at the fractions," is recast as "look *for* fractions" by the teacher, in turn 7. Note also the problem in turn 1 is given as subtraction, an apparent misstatement, since it is treated thereafter as an addition problem.

Topic-expanding elicitations are teacher-initiated moves which result when teachers choose to develop the IT topic beyond factual recall. Mehan's (1979) "metaprocess" elicitations and Gall's (1984) "higher cognitive" questions are examples of topic-expanding types of elicitations. As shown both by the topic-bound why-elicitations in the example above, as well as by the teacher-student negotiation of the cognitive level of the "how" elicitation in the excerpt below, the determination of the cognitive level of elicitations must be made at the level of the Interactive Task, rather than on the basis of the form of the elicitation alone.

This example is from a sixth grade Gifted and Talented (GT) class, in a science lesson from a unit on the behaviour of mealworms.

Teacher: (1) Do they have eyes?

Student$_1$: (2) Yes.

Teacher: (3) 'Kay. Do they have noses?

Student$_2$: (4) No.

Teacher: (5) Do they have ears?

Student$_2$: (6) No.

Teacher: (7) How do you know? How do you know whether they have (any of those) or whether they do not. Karen?

Karen: (8) Well, I know that they have eyes cause it was on the chart. And I knew that they didn't have noses cause I looked it up, but I don't know if they have ears or not.

Teacher: (9) Okay, do you, how would you figure, how would you try to determine that? Glenn.

Glenn: (10) Test their reactions to certain sounds.

Teacher: (11) Okay.

Glenn: (12) Like, see, you know, like put 'em up to (like sound) to see if it affects them.

Teacher: (13) Now, would that necessarily say they had ears?

Student$_2$: (14) No.

Teacher: (15) It would be an indication that they reacted to sound. Because of the vibrations, correct?

In this segment, (7) ("How do you know?") is an example which can be initially identified as a topic-expanding move. The previous factual recall elicitations (1), (3) and (5) set the stage for (7). When we examine the student's response (8), we find that her answer is more topic-bound than topic-expanding. Although the teacher's question would seem to call for a topic expansion concerning reasoning processes, Karen's response does this only in a trivial sense; she actually reports the location(s) of the factual information. The teacher accepts this response (with "Okay, ..." turn 9) and in so doing accepts the student's interpretation of his elicitation as topic-bound. Therefore, (7) actually turns out to be a topic-bound elicitation. This excerpt exemplifies well why VOL Interactive Tasks should be considered "social acts" (Mehan, 1979), whose meaning can only be fully understood when considered in retrospect.

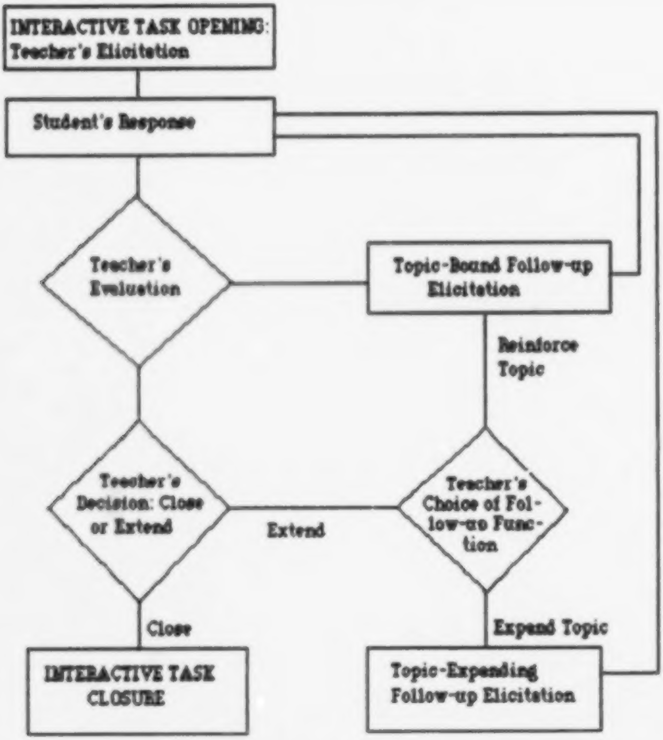
On the other hand, the teacher then requests (in the rest of turn 9) that another student explain and elaborate by figuring out how to solve a problem for which there is no factual background. Thus, this elicitation is virtually non-negotiably a topic-expanding move. And indeed, the remainder of the IT is an expansion in the direction which the teacher wants.

The ways in which teachers can develop Interactive Tasks are represented in the flow chart below. As the first two boxes and the first diamond show, VOL Interactive Tasks normally begin with an elicitation-response-evaluation exchange, and may consist of these moves alone, if the teacher decides that the student's response sufficiently addresses that Interactive Task. If the response is deemed problematic, some sort of resolution is always sought, almost always in the form of a follow-up elicitation (whether to the same student, or another), as opposed to teacher-supplied correction. An acceptable response to the opening elicitation can lead to topic-bound or topic-expanding elicitations, or any combination of the two. Any problematic responses given in the course of an extended IT will lead to the "embedding" of a resolving follow-up sequence in the extension. Note that it is the teacher who has all the significant options in the VOL Interactive Task. The number, length and acceptability of student responses does vary and does affect the topical development of ITs, but even these factors are ultimately controlled by the teacher through the turn allocation choices available to him or her.

It is an interesting issue to consider whether two sequential topically-related elicitation-response-evaluation exchanges constitute a single IT or two ITs. Either can be the case. It depends on how the teacher chooses to package them. Interactive Tasks are, in one sense, units of teaching rhetoric. They often correspond to the major facts and issues a teacher wants addressed. The facts and issues are typically structured in a discussion outline or in a written assignment. This conceptual organization affects the way the teacher expresses the connections between elicitation-response-evaluation sequences. New ITs are often referred to by the teacher as "the next one/step/thing," whereas follow-ups are often marked as relating logically or sequentially to the task as originally formulated, by markers such as *but, or, so,* or *then,* along with pronominal and other cohesive ties to the other moves in that IT.

Interactive Task boundaries are clearest when the teacher exercises strict control over the direction of the VOL, keeps to some predetermined format and uses preplanned follow-ups. Educological necessity often dictates flexibility and improvisation, however, and IT boundaries can in such cases become somewhat "fuzzy." Determination of IT boundaries can often be aided by considering overall VOL organization, and the teacher's initial framing of the VOL activity, as well as considering the discourse and interactional work performed by the moves in the turns-at-talk being analyzed.

The moves within -- and across -- the turns-at-talk of an Interactive Task can be analyzed as doing both discourse and interactional work. Interactionally, a move may function as an elicitation, a response, an evaluation, a comment and so forth. From a discourse topic perspective, a move may expand the topic from that given at the outset of the IT, or it may stay within the topic. Teachers mark transitions between functionally or topically different moves, especially those occurring within the same turn


INTERACTIVE TASK OPENING:
Teacher's Elicitation
Student's Response
Teacher's Evaluation
Topic-Bound Follow-up Elicitation
Reinforce Topic
Teacher's Decision: Close or Extend
Extend
Teacher's Choice of Follow-up Function
Close
Expand Topic
INTERACTIVE TASK CLOSURE
Topic-Expanding Follow-up Elicitation

Flow Chart: Step by Step Through the Interactive Task

at talk. This is done through several kinds of contextualization cues (Gumperz, 1982a). Cues include shifts in gaze and/or stance, increases or decreases in voice volume, tonic stress on topically important words and the use of discourse markers (Schiffrin, 1987) such as *now*, *okay*, *well*, *so* or *then*.

It is very important that students be able to discern the teacher's contextualization cues in order to follow what's going on, a necessary prerequisite to effective participation. The cues most amenable to description are the nonprosodic ones, which could be considered markers of rhetorical strategies.

Each teacher has his or her own style of managing to keep the discourse cohesive. From the list of strategies below, each used a unique subset:

1. Topic introduction and topic bridges (e.g. "Let's think a little bit about the word *float*" or "So we can just zip right ahead, can't we. What's the next step. We've looked at the denominators. Now, what are we going to do, Alison?");
2. Recasts, paraphrases (markers: *so, then*);
3. Repetition of self and students;
4. Use of ratifiers (Philips, 1985) such as *okay, all right, yes* both to evaluate responses and also to close/open an exchange;
5. Ways of marking conclusions, other important teacher utterances: *so, then*; tag questions, including *right?, okay?*

We will now take a close look at how these cues and strategies enable one teacher and one of her students to co-construct a cohesive Interactive Task.

Marking Topic Management and Interactive Linkages

The Interactive Task to be examined here is from a VOL in a sixth grade lesson on the topic of water cohesion. The verbal review is in this case a discussion of a previously written exercise, which was either homework or seatwork, probably the most common basic method for structuring VOLs, or perhaps the most prevalent reason for having them.

In this particular VOL, there are four (or perhaps five) questions being discussed. We say perhaps five because the question in D (below) consists of two related questions; it is impossible to tell whether the text designated them is 4a and 4b, or 4 and 5. Also, for whatever reasons, question one is not discussed. Each question designates an Interactive Task, which is introduced into the VOL either by the teacher directly (see C and D below) or by students under the teacher's direction (see A and B below). The teacher closes one IT and opens the next, when she feels that the question at hand has been adequately addressed. Following are the key utterances with which she does so:

A. *Opening of the VOL*: "Okay, why don't we go over question two, question three ..."
B. "Simon, read what question two says."
C. "Okay, um, . What about question three. Sanjeev, read that one."
D. "Wha-, what about the diagrams you had to draw. ... You're supposed to draw a before diagram and an after diagram."
    (a) "Okay, what would the before diagram show."
    (b) "Okay, and what did the after show.
E. "All right, the last one. What does soapy water do to water. Mm? What does, what happens to water when you put soapy water in it."
F. *Closing the VOL*: "Okay, do you have any questions. ... Uh, what I want you to do is take the material that you have [etc.]."

The IT excerpted for discussion is item C above, the second Interactive Task of this VOL. To the left of the transcribed text, each turn-at-talk is numbered sequentually, and its main move functions are summarized. Judgements about move functions were made through examination of the semantic (propositional) content and prosody of utterances, and also how the ongoing interaction indicated the participants themselves interpreted what was going on. As with all (hermeneutic) text interpretations, the goal here is to achieve the most reasonable, plausible interpretation of the discourse, and much of the discussion of this excerpt will be concerned with how and why particular interpretations of communicative function are made.

1. OPENING: T directs S to read Q	Teacher:	Okay, um.. What about question 3. Sanjeev, read that one.
2. S (a) reads Q; (b) reports his answer.	Sanjeev:	[Clears throat. Reading:] Which drops are higher and rounder, plain water or soapy water [No pause] I got ..plain water is higher 'n..rounder?
3. T: (a) accepts; (b) why-Q as topic-expanding follow-up	T:	Okay, d'you know why?
	?S:	Bec [ause (of/it___ ___?
4. S: S offers two explanations: A1 = contrast; A2 = causation	Sanjeev:	[Because..um...it's clean and .. the soapy water is heavier? The soap .. makes the water .. make heavy?
5. T: (a) Y/N Q as indirect rejection; (b) topic-bound resolving follow-ups: why-Q, Y/N Q	T:	Is is is heavy a good word to use for that. What happened to the soapy water when you put it on the wax paper ... (Did it flatten?)
6. S: "Yes" to Y/N Q	Sanjeev:	(It [___ ___) flat?]
7. T: (a) accepts; (b) resolving follow-up #2 to S's A2, turn 4	T:	[Mm hm] Okay, when something .. is on wax paper and it flattens out that way, what kind of power do we say it has.
8. S responds	Sanjeev:	[?at..?aten..mm(___) ... attensive force?

9. T: (a) corrects A (term not right); (b) gives meaning of term, using tag Q	T:	Adhesive. | Means it wants to | stick, right? |
10. S affirms T's tag Q	Sanjeev:	|_ (Avi-...adhesive) Yeah.
11. T: (a) continues w/turn 9, *b, as transition to follow-up; (b) topic-bound factual-recall follow-up; fill-in-blank type	T:	Anything that wants to stick that won't mount up like..water. 'Cause we said water had what kind of power.
12. Choral response	Choral:	| Cohesion |_Cohesive
13. CLOSING T: (a) accepts; (b) expands w/description of term in response OPENING OF NEXT IT	T:	Okay. It wants to stick together so it makes higher domes on the top of your little cups ... [Next IT:] Okay um.. Wha..what about the diagrams you had to draw.

This 13-turn IT shows some of the interesting ways in which going over written assignments in class can entail both expanding and resolving follow-up elicitations.

Turns 1 through 3 are fairly straight forward (except, perhaps, for the idiomatic phrasing of the elicitation in 1, with "what about ..."): the teacher directs Sanjeev to read his answer for question 3; Sandjeev does; the teacher uses the standard (but good) follow-up question, "Do you know why?"

Sanjeev's response (turn 4; no number was given to the overlapping response from the unidentified student) is not what the teacher had in mind. From a discourse-analytical standpoint, certain aspects of his response show some skills, though in others it is lacking. On the plus side, he uses *because* to introduce his response, making its coherence explicit. (It should be noted, however, that responses to why-Qs almost always begin with *because*.) His pronoun use is clear; *it* refers to *plain water* in his previous response, which was also the topic of that answer. He manages to shift the topic from *plain water* to *soapy water*, by first conjoining a clause about an attribute of soapy water to the *because* clause about plain water, then recasting his response to deal only with what he has said about soapy water. On the minus side, his response contains 5 noticeable hesitations, a nonstandard pronunciation ([di] for *the*), and inappropriate word choice (*make heavy* for *get/become heavy*). Further, although the conjoined clauses in the first utterance of this turn concern contrast, they are conjoined with *and* rather than *but*, and both utterances of this response were given with question-like intonation.

The teacher seems disconcerted by Sanjeev's answer, as she stutters at the beginning of her evaluative response (utterance 1 of turn 5): "Is is is heavy a good word to use for that." Syntactically, this utterance is a yes/no question, but its intonation is that of an assertion, and the conversational implicature is clear: 'Heavy is *not* a good word for use for that.' While her rejection is indirect, it is nontheless evident. Moreover, she has indicated what it is about Sanjeev's answer that was lacking: his use of the word *heavy*.

But upon close examinatin of this discourse segment, it is evident that this teacher feels she is dealing with more than just a vocabulary problem, even though that is how she expresses it. She uses a sequence of two follow-up questions to resolve the problem. The first of which concerns what the student should have observed in a particular relevant step of his experimentation (turn 5, utterances 2 and 3). The second of which concerns how the observed experimental characteristic should be named (turn 7). If she had felt that the flaw in Sanjeev's response was purely a linguistic problem of a nonnative English speaker, she probably would have asked only about the process's name, or simply supplied it herself. However, the fact that she asks Sanjeev to recall his experiment indicates that she believes he may have misunderstood or misinterpreted what was going on. Her first resolving follow-up addresses this issue, apparently to the teacher's satisfaction. That she asks, "Did it flatten?" indicates that she has hypothesized that *make heavy* was meant to describe what was observable about the water drop in a very general sense when the soap was added, rather than his having mistakenly thought that adding soap changed the density of the water. But the fact that she asks the question shows that she does want to make sure her hypothesis is correct. In fact, it is possible that she is trying to influence the way he regards what he has observed, by the way she has recast it.

The teacher's second of the two resolving follow-up elicitations in this sequence (turn 7) is highly context-dependent, despite the fact that it concerns the proper scientific name for experimentally observed phenomena: "Mm mm. Okay, when something.. is on wax paper and it flattens out that way, what kind of power do we say it has." The teacher begins as if she is going to generalize as much as possible from the experimental phenomena ("when something...") but then shifts perspective back to exactly what occurred in the experimentation ("...is on wax paper and it flattens out that way"). Note that the subject of the second clause, *it*, refers to *something* in the first clause, but rather than giving interpretive information about *it*, *it* (and the clause of which it is the subject, *flattens out that way*) gives interpretive information about *something*. As an indefinite noun, *something* starts out with very little semantic content and probably always depends to varying degrees on context for its interpretation. In this instance, the first clue of the identity of *something* comes from the VP of the clause of which it is the subject: *is on wax paper*. This is cohesive with *on the wax paper* in the teacher's first follow-up (turn 5), which concerned the experimentation. The frame of reference is thus shifted from the very general to the very specific and situational, and it gives the interpretation *a liquid drop* or something similar to *something*. Her saying that *it flattens out that way* further refines the interpretation of *something* to *a drop of soapy water*. The question which follows, "what kind of power do we say it has," contains the prompt/clue that the term for the observed phenomenon is "____ power," and the question would have to be about at the bottom of anybody's scale of the cognitive demand of elicitation.

Sanjeev does have trouble remembering the term, though. His *attensive force* is corrected to *adhesive force* by the teacher. Her outright correction of the term does not seem face-threatening.

Brown and Levinson (1978) developed a detailed schema for the description of the language use strategies for polite, non-face-threatening communicative interaction. In the most general terms, these concern ways in which we show that we are sensitive to our interlocutors' needs to be "unimpeded," and to be "appreciated." The teacher's supplying of the correct term could be seen as cooperative, actually, since she is helping him to come up with what he wants. Giving one's interlocutor the cooperation he wants is considered a strategy for expressing "positive politeness" (Brown and Levinson, 1978:57).

In fact, if the teacher had asked another student what the correct term was, that would have been much more face-threatening for Sanjeev. After making the correction, the teacher defines (or maybe describes) the meaning of the term *adhesive force*: "Means it wants to stick, right?" This teacher (and others we have observed) seems to be using the tag question form to highlight something of importance. This use is an extension of tag questions' more general function, which is to elicit agreement. When a teacher uses a tag question for eliciting emphatic agreement, hearer agreement takes the form of each student telling him or herself that what the teacher has just said is so.

Turn 11, Sanjeev's agreement with the teacher's tag question, is essentially an interruption of her definition/description of adhesion. She continues this in turn 12, with "Anything that wants to stick that won't mount up like..water." This first utterance of turn 12 is not a sentence, but a single noun predicate (NP), albeit a fairly complexly structured one, in which the head noun (*anything*) is modified by two relative clauses. The second relative clause, *that won't mount up like water*, encodes a contrast, though this is not as explicitly expressed as might have been. The first potential problem is that the constituency status of *like water* is ambiguous. It could be interpreted as inside or outside of that second relative clause (though she intended it to be part of the relative clause). The outside interpretation would see it as a reduced relative clause modifying *anything* (i.e. "anything like water"), leading to the misunderstanding that water wants to stick and won't mount up (and has adhesive force). The vague semantic intent of the head noun *anything* contributes to the vagueness of the comparison, though the teacher probably was again trying to move beyond the experimental situation to more general principles. If she had used the NP in a predication, the relevant point of contrast and level of abstraction could have been specified. The last utterance of turn 11 is a topic-bound factual-recall follow-up, concerning the term which explains what it is about (water) that makes it contrast with *adhesive anything* which has just been described: "'Cause we said water had what kind of power." The question is, like the one to elicit the term *adhesive power/force* in turn 7, a fill-in-the-blank task. Given that there were only two such terms, and one had just been mentioned, the answer was obvious. This is confirmed by the fact that the reponse was a choral one. Choral responses seem to be limited to short, highly predictable answers, and they are delivered with a flat intonation.

In turn 13, the closing turn of this IT, the teacher accepts the choral response and then gives a definition/description of the term's meaning with which the students responded, *cohesion/cohesive force*. The description contains cohesive ties to the beginning of the IT. In the clause, *so it makes higher, it makes higher domes on the top of your little cups*, the first occurrence of *higher* is a repetition of that word in the original homework question and in Sanjeev's response (both contain the phrase *higher and rounder*). Then, the phrase *higher domes* is considered a single tie to *higher and rounder* (*drops*). This brackets the discussion nicely, and it is another indication that the IT is being given closure. The main indication is interactive/topical. The teacher moves to the next question.

This Interactive Task and the VOL within which it occurred are typical in one basic respect. Homework or seatwork often serves as a basis for verbal VOLs. As this excerpt shows, the verbal interaction goes beyond what was previously written. The extensions from the basic homework answers come about from at least three teacher purposes. Either the teacher intends to resolve problems with student response; or the teacher intends, as a result of the choice the teacher makes at a given point, to extend the interaction in order to reinforce factual learning with topic-bound follow-up elicitations; or the teacher intends to foster higher cognitive learning with topic-expanding elicitations.

This excerpt does show that topical development alone cannot be taken as an indicator of the kind of learning being fostered, but that the students' role in the topical development must also be taken into account. The extensions from the homework answers in this case involved defining, describing and explaining. All three activities could have provided students with opportunities to engage in higher cognitive interactions. But it was the *teacher* who did the defining, describing and explaining. This, unfortunately, is also not uncommon.

Teachers' Elicitation Choices, Academic Subject and Curriculum-Specific Language Use

Teaching and learning basic facts such as the multiplication tables or the names of the planets in the solar system are often done through fact memorization and drill reinforcement. This leads to the predominance of factual recall elicitations in elementary (i.e. primary) classroom interaction (Gall, 1984:41). This would explain the corresponding prevalence of Interactive Tasks which have factual-recall opening elicitations and topic-bound follow-ups in our data. When basic facts are in the process of being mastered, incomplete or erroneous responses do occur, and teachers will often pursue the correct response through follow-up elicitations which paraphrase all, or a part of the original elicitation. Teachers may even feel that correct responses need the reinforcement which topic-bound follow-ups can provide. They accordingly prompt students to recall more details and intend students to develop a broad subject-specific vocabulary.

While conducting our analysis of topical development through Interactive Tasks, we became interested in the role of grade level (year in school) and subject matter differences in academic functional language use. We hypothesized that because the complexity and scope of mathematics and science knowledge increase as students progress from grade to grade, students should show a greater familiarity with a broad range of topic-bound tasks at the sixth grade level. At the same time, students should be given increasing opportunities to broaden their knowledge and use of higher cognitive elicitations. Sixth grade students might also be expected to exhibit greater sophistication and complexity in their contributions to VOL discussions.

However, in comparing transcripted data of selected third and sixth grade science and mathematics lessons, we did not find a noticeable expansion and/or differential use of academic language/interaction functions. The language/interactional functions detected in our data have been variously defined in the literature (e.g. Gall, 1984; Shuy, 1986), but in general, the functions may be considered to lie on a continuum between purely topic-bound factual recall elicitations and topic-expanding higher cognitive types such as those requjiring students to draw inferences or make generalizations. The continuum we use is as follows:

TOPIC-BOUND
Factual Recall
Repeating
Recalling
Reporting
Defining
Elaborating
Comparing (as Choice)
Describing
Clarifying
Higher Cognitive Function

TOPIC-EXPANDING
Higher Cognitive Function
Explaining
Giving Opinions
Interpreting
Elaborating
Making Comparisons
Drawing Inferences
Making Generalizations
Higher Cognitive Function

We found some interesting patterns of language use, although considering the limited nature of our database, these must be considered tentative and hypothesis-generating, rather than generalizable findings. Differential patterns were found in science vs. mathematics elicitations, topic-bound vs. topic-expanding elicitations and elicitations in regular vs. gifted and talented classes. In general, Verification of Learning activities in science lessons encompass a greater variety of elicitation functions (compare Tables 1 and 2 with Tables 3 and 4). It seems that, at least in the regular third and sixth grade classrooms we observed, knowledge is verified and conveyed through a limited number of language/interactive functions. The gifted and talented mathematics classes did, however, make fairly consistent use of higher cognitive functions.

LANGUAGE/INTERACTIVE FUNCTIONS IN SCIENCE VOL ACTIVITIES
TOPIC-BOUND ELICITATIONS

Intensity of Occurrence	**Third Grade**	**Sixth Grade**
Most Common	Reporting	Reporting
	Defining	Clarifying
	Repeating	Providing Specific Information
	Comparing, as Choice	
Least Common	Describing	

Table 1: Topic-Bound Elicitations in Science Verification of Learning Activities

LANGUAGE/INTERACTIVE FUNCTIONS IN SCIENCE VOL ACTIVITIES:
TOPIC-EXPANDING ELICITATIONS

Intensity of Occurrence	**Third Grade**	**Sixth Grade**
Most Common	Explaining	Explaining
	Giving an Opinion/ Interpretation	Predicting
	Elaborating	Elaborating
	Comparing	Drawing Inferences
	Drawing Inferences	Generalization
Least Common	Generalizing	

Table 2: Topic-Expanding Elicitations in Science Verification of Learning Activities

LANGUAGE/INTERACTIVE FUNCTIONS IN MATHEMATICS VOL ACTIVITIES:
TOPIC-BOUND ELICITATIONS

Intensity of Occurrence	**Third Grade**	**Sixth Grade**
Most Common	Reporting	Reporting
	Repeating	Repeating
	Clarifying	Clarifying
Least Common		Describing

Table 3: Topic-Bound Elicitations in Mathematics Verification of Learning Activities

LANGUAGE/INTERACTIVE FUNCTIONS IN MATHEMATICS VOL ACTIVITIES:
TOPIC-BOUND ELICITATIONS

Intensity of Occurrence	**Third Grade**	**Sixth Grade**
Most Common	Interpreting	Explaining
	Classifying	Justifying
	Explaining	Giving Metaprocess Description*
	Giving Metaprocess Description	Giving Analytical Description*
Least Common	Estimating/Predicting	

Table 4: Topic-Expanding Elicitations in Mathematics Verification of Learning Activities (*Only in Gifted/Talented Lessons)

Mathematics and science VOLs differ from one another in several curriculum-based respects. In mathematics, learning is often verified through activities such as games and manipulatives. Question sequences tend to be homework or seatwork connected. They do not seem to be as central to accomplishing teaching goals as in science. Mathematics Interactive Tasks are often the minimal elicitation-response-evaluation type, mostly calling for students to report calculations. Student responses are linguistically sparse, usually numbers. This more limited inventory of language/interactive functions seems actually to facilitate the participation of nonnative English-speaking students. This might explain why limited English proficient students, in general, seem to do as well or better in mathematics than in other areas, including science VOLs.

Some VOLs concern mathematical processes, e.g. the steps in adding and subtracting fractions, or how a particular word problem was solved. Interactive Tasks concerning processes may involve fact or higher cognitive elicitations, depending on whether the student is being asked to name the process or to apply it. Word problems usually entail the application of processes and so afford opportunities for students to explain why particular processes are used and to verbalize their reasoning processes (i.e. engage in metacognition).

Verification of Learning activities in science draw from a more extensive inventory of language/interactive functions (see Tables 1 and 2), and thus require greater verbal academic language competence of students, if they are to convey their scientific knowledge appropriately and successfully. Unlike the mathematics lessons which we observed, the science curriculum does not make extensive use of homework or individual seatwork. Instead, this school system's curriculum emphasizes a practical approach to learning science, implemented through experimental kits. Each curriculum unit involves the use of a particular kit (e.g. third grade sinking/floating unit, sixth grade mealworms unit), with students usually working on the experimental activity in pairs or small groups. During this type of instructional phase, the teacher will usually circulate among the students, observing, commenting and answering and asking questions. Unless the experimental work is at an intermediate point and takes up the entire class period, the teacher will often use the last few minutes of the period for a VOL verbal review.

The experimental activity can (and often does) provide the basis for a well-structured verbal review, with the initial Interactive Tasks being factual recall elicitations concerning what the students have just done or observed. The discussion can then expand to higher cognitivie elicitations requiring students to compare the behaviour or characteristics of two things in the kit, or to explain what was observed in terms of underlying principles, or to give further examples or applications.

Whether the higher cognitive elicitations constitute expansions of initially fact-based Interactive Tasks, or whether they would be considered separate, topically related Interactive Tasks depends on how the teacher chooses to handle them. The Interactive Task can be considered a unit of teaching rhetoric, and the teacher will often indicate by his or her framing and contextualization cues whether IT closure comes before or after the second elicitation. For example, in the sixth grade science VOL previously discussed page, Interactive Task D is organized in two parts. The teacher's utterance, "What about the diagrams you had to draw. ... You're supposed to draw a before diagram and an after diagram," could have in itself been used to elicit a comparison of the diagrams. Instead, this teacher chooses to elicit separate descriptions of each diagram. Her next utterance is, "Okay, what would the before diagram show," followed later by, "Okay, and what did the after show." She chooses to make the comparison between the two diagrams herself.

VOL Interactive Tasks in gifted and talented science and mathematics classes tended to have a greater inventory of topic-expanding elicitations than did VOL Interactive Tasks in regular, heterogeneous classes. At both grade levels, gifted and talented (GT) students were given more opportunities to respond to higher cognitive elicitations. To some extent, this is due to curricular differences, especially in sixth grade mathematics, where auxiliary texts used in the GT program routinely require students to apply and interpret mathematical principles. Beyond curricular differences, teachers' choices also play a role. The two GT teachers whom we observed (one third grade, one sixth grade) initiated topic-expanding (higher cognitive) follow-ups more routinely, and they also routinely used elicitations to involve students in framing the VOL topic (e.g., "Okay, we're going to go over your assignments first. Can anyone tell me, what was the objective of the assignment?") as well as summarizing it.

To summarize our description of differential language/interactive functions in our data, we suggest that the more extensive inventory of verbal academic language functions in science (vs. mathematics) seems to be related primarily to differences in subject matter, curriculum scope and teaching orientation; different grade level requirements seem not to have an effect. In terms of teacher differences in eliciting higher cognitive knowledge from students, we did not find a significant difference between the third and sixth grades, but we did note a generally greater use of higher cognitive elicitations in gifted and talented classes than in regular classes.

Conclusion

We have presented a description of classroom question/answer verbal interaction in Verification of Learning (verbal review) phases of lessons, in order to demonstrate the usefulness of the Interactive Task as a unit of analysis. We regard the Interactive Task fundamentally as an encounter (in Goffman's sense) between the teacher and a student, in which the mutual activity is the co-construction of a satisfactory response to the teacher's question. This often involves much more than just a question and a response. The response may be partially acceptable, or the initial elicitation may be a preliminary to the central elicitation of that IT, or the teacher may decide that because the student hesitated before responding, or responded with question intonation, the student has not learned the lesson material adequately. Extensions can occur for any of a number of teacher based reasons, some preplanned, some evolving with the interaction.

The analysis of VOL Interactive Tasks in our sample of third and sixth grade mathematics and science lessons has enabled us to describe in a unified way not only the interactional work mutually performed by teachers and students, but also the specific markers and strategies through which they signal their intentions.

In order to participate successfully in VOL Interactive Tasks, students must be able to discern the teacher's intentions by interpreting the teacher's cues. In VOLs, the purpose and direction of the communicative interaction are to a greater or lesser extent (often entirely) determined by the teacher. If a culturally different student misunderstand the purpose of the activity, or encounters trouble in following the organization of the interaction, nobody is likely to succeed. Neither the student's response, nor the teacher's attempt to verify learning will be adequate. It is therefore particularly important that nonnative English speaking students understand their responsiblity for previouslly learned information and how to provide this information on cue. Teachers need to structure their VOLs clearly by providing ample and explicit framing to the VOL and the Interactive Tasks comprising it. And while teachers may need to do more discourse-organizational work, they need to do less of the verbal review. Students can only develop verbal academic communicative competence if they are afforded frequent opportunities to verbalize descriptions, comparisons and explanations. Both mathematics and science VOLs can provide these opportunities, if the teacher does not over-manage the interaction.

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An Educology of Culture: Principals' Descriptions of a Good Teacher from Two Cultures (Israel and America)

Lya Kremer-Hayon
Haifa University, Haifa, Israel
and
Stanley Starkman
Chicago State University,
Chicago, Illinois, USA

ABSTRACT

Elementary (primary) school principals from the Chicago area of the USA and from Israel described what they meant by a good teacher. These descriptions were classified into three categories: idiosyncratic, national or cross-national in character. The two groups or principals provided 140 non-redundant descriptions out of 1,948 received. The 140 descriptions were sorted into 8 goal categories. The chi square analysis of categories yield no differences in value ordering between the two groups of principals with one possible exception: the category of latent curriculum. A detailed content analysis within categories revealed differences in which singular national beliefs predominated, cross-national values played a lesser role, and idiosyncratic descriptions rarely occurred. Clearly each group of principals presented a different type of teacher as being best able to help the principals achieve their goals. What each group meant by a good teacher in terms of how they described them differed substantially.

Introduction

An examination was undertaken of unprompted descriptions of good teachers by principals from two countries whose different national values could influence teacher selection, student outcomes and the overall process of cultural transmission through schools. What do principals select as the best teacher characteristics and to what extent are these values idiosyncratic, cross-national or nationally distinct? It has been shown that meaning differs cross-culturally for such educological concepts as achievement (cf. Fyans, Salili, Maehr and Desai, 1983) and success and failure (Triandis, 1972). To our knowledge, there has been no detailed examination of cross-cultural differences in educational values and beliefs among principals.

Clearly, principals' values will affect outcomes in schools through their selection and nurturance of certain teachers whose characteristics they value over others. When principals listed the characteristics of good teachers they did so because they believed that these characteristics were paramount in determining the outcomes of goal-oriented tasks. These values and beliefs are based, in turn, on past socio-cultural experiences. They were not random utterances. Our interest was in exploring the extent to which broad, national factors affected what principals meant by a good teacher and whether what they meant by a good teacher differed between the two nations.

Principals, when not prompted, will include teacher characteristics related to many school functions. All of the elicited functions and related characteristics are also implicitly important in facilitating school goals (Bidwell and Kasarda, 1980; Englehard, 1985; Zak, 1981).

Principals from Israel were selected as the case study contrast with principals from the USA (Chicago area). Israel differs culturally from the USA in ways which could affect the meaning of good teacher. Israel identifies with the Judaic rather than the Judeo-Christian tradition of values. It has a socialistic rather than capitalistic economic stance. It has the pioneer mentality of a new nation. It has a sense of national vulnerability which derives from both the historical experience of the holocaust and the contemporary prolonged state of war with its neighbours. We hypothesized that such national differences generated values and beliefs among Israeli principals which differed from those found among American school principals.

Method

Samples of Chicago area and Israeli principals were assumed to represent a main-stream segment of the educational values and beliefs of each nation's principals.

From 1982 school district directories the names of 200 principals from the Chicago area and 65 from the northern half of Israel were obtained using a table of random numbers. Letters were sent to principals of public (i.e. government) and private (i.e. independent) city and suburban elementary (i.e. primary) schools in the Chicago area. They were asked to list the most important characteristics of a good teacher. A similar letter written in Hebrew was sent to 65 randomly selected principals of secular schools in Israel. The Israeli descriptors were translated into English by the Israeli author. An Israeli colleague independently translated the English back into Hebrew to validate the translation.

The examination of teacher characteristics was facilitated by associating them with broad school functions such as pupil achievement, parent and community relations and so on. To assess the relative rank value for principals of a given functional category, the value of a category was defined by the number of teacher characteristics assigned to it compared to the number assigned to other categories: the more characteristics assigned, the more important the category.

Each descriptor was recorded. Descriptions found to have common meanings defined through a computerized thesaurus search were recoded with a single term representative of a thesaurus cluster. All duplicates were removed. (See appendix for the final list of 140 descriptors.) Each of the nonredundant descriptors from both groups of principals was then sorted by two judges into one of 8 categories. The sort criterion was the judgement of congruence between the task implied in a teacher description and a goal-oriented category. Two American graduate students in school administration served as judges. The categories were based on the analysis of goal-related tasks by Potter (1980).

After the sort was completed, the descriptors were separated within each category according to principal group. A contingency table consisting of 8 categories by 2 groups was analyzed using the chi square CATMOD procedure (SAS, 1985). The rank orders of the categories by the two groups and the semantics of the individual descriptions were also examined.

Results

One hundred and twenty-four Chicago area principals (62 percent of the original sample) submitted 1,452 descriptions of a good teacher. The mean number of descriptors offered by the Chicago area principals is 11.69 with a standard deviation of 3.3. After the 1,452 American descriptors had been processed through the thesaurus, 97 were considered by the judges to be terms with distinctly different meanings. The 97 were sorted into 8 categories.

The categories relating teacher characteristics to goal tasks were:

(1) Formal educational charcteristics important for manifest pupil achievement.
(2) Values related to pupil achievement in the latent or informal curriculum (Engelhard, 1985).
(3) Personal characteristics affecting teaching and other school activities.
(4) Characteristics related to student discipline.
(5) Administrative characteristics and values of teachers.
(6) Characteristics affecting pupil self-concept.
(7) Characteristics related to ethical and professional matters.
(8) Characteristics related to parent/community and extra-curricular areas of responsibility.

Each one of the 92 terms or their original synonyms had been offered by at least 11 principals. Only five of the 97 descriptions represented idiosyncratic responses. Each of these was selected by no more than three principals in the sample. Fifty Israeli principals from the original list of 65 (70 percent) returned lists containing 496 descriptors. The mean number of descriptors per respondent is 9.94 with a standard deviation of 2.7. From the 496 original Israeli descriptors, 43 thesaurus distinct descriptors emerged. Forty of the descriptors were duplicated by at least 6 Israeli principals. The remaining three items were offered by no more than two principals. The overall analysis for the contingency table of the number of descriptions placed in the 8 categories by the 2 groups of principals yielded chi square results of 13.21 with df = 7 (p = 0.06). The only statistically significant difference between the two groups of principals is Category 2: *Values related to pupil achievement in the latent curriculum* (chi square = 4.47; p = 0.03). All other contrasts achieve probabilities equal to or greater than 0.20.

The ranked order of importance of the 8 categories (based on the number of descriptions assigned to a category) for the two groups of principals is shown in Table 1. The difference in overall ranks between the two groups is not statistically significant. Only two categories differ noticeably between the two groups. They are *Values related to pupil achievement in the latent curriculum* (ranked third by the Israelis and last by the Chicago area principals) and *Administrative characteristics and values* (ranked third by Chicago area principals and last by the Israelis). All of the other categories hold similar ranks with *personality* and *educational preparation* ranked first and second by both groups.

Table 1: Category Rank by the Two Groups of School Principals

	Chicago	Israel
Category of Descriptor	**Rank**	**Rank**
1. Formal education	2	2
2. Latent curriculum	8	3
3. Personal	1	1
4. Student discipline	7	6
5. Administrative	3	8
6. Pupil related	5	6
7. Ethical and professional	6	6
8. Parent/community	4	4

When considering the 8 categories, we found that distinctive national factors did not affect principals' value ordering of the 8 categories. Forty percent of all descriptions produced by both groups dealt with personality characteristics.

Discussion

Although the principals in the two samples agreed on the relative category values, there were noticeable differences between the two groups in their individual descriptions. These differences suggested that the macro-analysis by categories obscured meaning and value differences at a more detailed level. For example, within the personality category which both groups valued highest, each group selected many more different rather than common characteristics. This pattern held for the remaining 7 categories.

It is noteworthy that the importance of teacher personality characteristics persisted despite the lack of demonstrated relationships between personality variables and measures of teacher effectiveness reported in the literature. While that literature relates specifically to pupil achievement, in this sample the descriptors were referenced to a variety of school functions.

The Israelis in the sample believed a good teacher meant one who was concerned with teaching such values as loyalty to country and civic pride, was receptive to advice, intuitive, feeling and non-judgemental; was responsive to suggestions from superiors; and was able to establish relationships with students based on equality and mutual respect (Watzlawick, Beavin and Jackson, 1967) while also being able to maintain control in discipline matters.

While recognizing the importance of formal education, the Israeli principals in our sample placed relatively little value on the teacher's need to acquire a wide variety of specific teaching skills with the exception of skills with audio-visual materials and equipment, including personal computers. There is the suggestion in this set of values that they doubted the value of educology for teachers. The Israeli principals also believed that it was unimportant that teachers possessed specific administrative skills or characteristics. In addition, they indicated that parents and community should be encouraged to have positive but limited interaction with the school and that they valued teachers who had the skills to effect this interaction.

The Chicago area principals viewed a good teacher quite differently. There was no concern mentioned that values related to loyalty and citizenship be taught. A good teacher meant one who was action oriented, mature, assertive, energetic, persistent and more intellectual than feeling. A good teacher was one who was significantly concerned with administrative demands and could respond to those demands. The good teacher had acquired a great many specific teaching skills and techniques. This suggests that the principals place a value on educology for teachers. The principals valued teachers who alone made the rules in all their relationships with pupils. Finally the Chicago area principals valued the teacher who encouraged parent and community involvement and who was able to respond appropriately.

Both groups of principals held some values and beliefs in common. They both agreed that the good teacher meant one who was organized, had a sense of humour, had skills in lesson planning, had a good grasp of child development, was flexible in their teaching techniques, and was familiar with the use of audio-visual materials and equipment, including personal computers. Neither group believed ethical or professional characteristics were important relative to other characteristics (Etzioni, 1969; Shulman, 1986).

These findings suggested that while the values of general goal categories did not differ between the two principal groups, except perhaps regarding national and civic values, they did suggest that the implementation of school goals differed in terms of the teacher characteristics selected. They also indicated that in our samples singular national beliefs predominated, cross-national values played a lesser role, and idiosyncratic descriptions rarely occurred. Clearly each of the principal groups presented a very different type of teacher who would best

be able to help them achieve their goals. What each group meant by a good teacher in terms of how they described them differed substantially.

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Appendix

Table 2: List of 140 Descriptors of Good Teachers by Chicago Area and Israeli Principals

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Category 1: Formal Educational Characteristics Important for Manifest Pupil Achievement

Statement to be Completed by Principal:

"Through formal education a good teacher acquires competence in . . . ."

Principals' Responses:

Chicago N - 19

Diagnostic skills
Spelling
Teaching learning disabled
Evaluation skills
Child development +
Classroom management
Lesson planning skills +
Subject matter areas
General knowledge
Group process skills
Knowledge of materials
Use of educational technology
Implementing plans
Questioning skills
A variety of instructional approaches +
Many teaching methodologies
Problem solving skills
Understanding the democratic process *

Israel N - 8

Expressing oneself clearly
Using language correctly
How to help students develop specific learning skills
Child development +
Clarifying educational objectives
Lesson planning skills +
Motivation arousal skills
A variety of instructional approaches +

+ Both groups of principals offered this descriptor.
* Unique response offered by no more than two principals.

Category 2: Values Related to Pupil Achivement in the Latent or Informal Curriculum

Principals Responses:

Chicago N - 1	**Israel N - 6**
Fosters responsibility *	Cultivates loyalty to country
	Cultivates national values
	Educates for civic values
	Encourages critical thinking
	Fosters social values
	Rewards creativity in students *

Category 3: Personal Characteristics Affecting Teaching and Other School Activities

Principals Responses:

Chicago N - 43	**Israel N - 14**
Poise	Intuitive
Determination	Enjoys teaching
Responsible	Flexible +
Courageous	Critical
Intellectually stimulating	Sense of humour +
Willing to take risks	Has aesthetic feelings +
Sense of humour +	Diligent
Unselfish	Open to changing instruction
Positive attitude	Organized in work +
Tactful	Accepts failure
Punctual	Tolerant
Open to suggestions +	Open to suggestions +
Receptive to criticism	Sensitive
Patient	Creative +
Dependable	
Enjoys teaching	
Flexible +	
Intelligent	
Emphathic	
Self motivated	
Extravert	
Able to make decisions	
Ambitious	
Takes initiative	
Common sense	
Creative +	
Good health	

Is kind to others
Loves learning
Has problem solving skills
Mature
Consistent
Receptive to new ideas
Leadership ability
Positive self-concept
Organized +
High energy level
Good mental health
Hard working
Efficient
Loves children
Likes subject area
Enthusiastic

Category 4: Characteristics Related to Student Discipline/Control

Principals Responses:

Chicago N - 3	**Israel N - 3**
Promotes student self discipline	Maintains discipline +
Firm in discipline	Strict disciplinarian
Maintains discipline in class +	

Category 5: Administrative Characteristics and Values of Teachers

Principals Responses:

Chicago N - 10	**Israel N - 2**
Accurate record keeping	Carries out school policy +
Ability to follow directives	Handles school routine
Carries out school policies +	
Rapport with school personnel	
Good attendance at meetings *	
Supports the administration	
Good daily attendance	
Cooperative with school personnel	
Takes care of equipment and classroom	
Follows curriculum	

Category 6: Characteristics Affecting Pupil Self-Concept

Principals Responses:

Chicago N - 7

Gives praise
Informs students of expectations
Is fair to students
Has time for students
Rapport with students
Aware of individual student needs
Teacher and pupils plan together

Israel N - 3

Believes in student potential
Creates mutual respect with students
Open to criticism by students

Category 7: Characteristics Related to Ethical and Professional Matters

Principals Responses:

Chicago N - 6

Is a role model +
Neat appearance
Respect for profession
Dedicated to teaching
Sets high standards
Professional in behaviour

Israel N - 3

Professional
Identifies with the profession
Is a role model +

Category 8: Characteristics Related to Parent/Community and Extra-Curricular Areas of Responsibility

Principals Responses:

Chicago N - 8

Has outside interests *
Participates in school activities
Rapport with community/parents
Respect for parents
Encourages parental involvement
Gives Service to the community
Good relations with parents
Skilled in carrying out extra-curricular activities +

Israel N - 4

Involved in students' social life *
Good relations with parents
Skilled in carrying out extra-curricular activities +
Involved in community life

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An Educology of Reform in Early Childhood Teacher Education: A Comparison of the PRC and the USSR with the USA

Bernard Spodek
University of Illinois, Urbana-Champaign, USA
and
James Hoot
State University of New York
Buffalo, New York, USA

ABSTRACT

While information is readily available concerning proposals for teacher education reform in the USA (e.g. Carnegie and Holmes), a dearth of scholarly discourse exists concerning reforms being advocated in other countries. With the period of liberalization in China (prior to the Tien Amin Square massacre) and the era of glasnost *in the Soviet Union, the opportunity has presented itself to explore current educational concerns and approaches employed by socialist colleagues in dealing with evolving educational issues. We explore here recent and developing proposals for reform in early childhood education and teacher education from two major socialist countries -- the People's Republic of China (PRC) and the Union of Soviet Socialists Republic (USSR) -- and make comparisons with the USA*

Introduction

While information is readily available concerning proposals for teacher education reform in the USA (e.g. Carnegie and Holmes), a dearth of scholarly discourse exists concerning reforms being advocated in other countries. With the period of liberalization in China (prior to the Tien Anmin Square massacre) and the era of *glasnost* in the Soviet Union, the opportunity has presented itself to explore current educational concerns and approaches employed by socialist colleagues in dealing with evolving educational issues.

We explore here recent and developing proposals for reform in early childhood education and teacher education from two major socialist countries -- the People's Republic of China (PRC) and the Union of Soviet

Socialists Republic (USSR) and compare those developments with the situation in the USA We obtained our data through the analysis of documents from the State Education Commission (SEC) of China and that of the USSR, interviews with Commission officials, teacher educators and administrators, observations of early childhood teacher training programs and analysis of related scholarly and popular writings in English, Chinese and Russian

Early Childhood Education in the PRC

Neither early childhood education nor elementary education have a history that goes back beyond the twentieth century in China Literacy, if attained at all, was attained at home or through cooperative arrangments among families or at charitable schools (Fairbanks, 1986) The first public kindergartens were created when twenty kindergarten teachers were brought to China to establish kindergartens in 1903 Additional Japanese kindergarten teachers arrived in 1920 Wu Zu-zhe, a Chinese educator, wnet to Japan in 1920 to study kindergarten education (Spodek, 1989)

After World War I, the Chinese resisted Japanese influences in educational and cultural affairs and looked more towards America and Europe as sources of modernization Christian missionaries had established kindergartens in China as early as 1885 and had even established a kindergarten teacher training program by 1899 (Huang, 1987) Missionary schools continued to influence education in China until 1949 In addition, the Boxer Rebellion indeminification to America was set aside for educational purposes, and many Chinese youth went to the USA to study in a variety of fields, including education One of the more popular universities for Chinese students was Columbia University Its Teachers College was a source of major ideas about early childhood education In addition, John Dewey spent a period of two years in China during 1919-1921, and this had a significant impact on Chinese educators (Keenan, 1977)

Chinese educators, such as Chen He-qin in Nanjing and Zhang Xue-men in Beijing, evolved Chinese kindergarten practices which were build upon American progressive kindergarten ideals They also created institutions to prepare teachers for these kindergartens (Zhong, 1979, 1981) Through World War II, kindergartens and other educational institutions were heavily influenced by American educological theory and practice

Kindergartens only served a small proportion of the young children in China In 1924, there were 190 kindergartens in that country, 156 of which were run by missionaries (Huang, 1987) With the establishment of the People's Republic of China in 1949, Chinese education underwent a major change China now looked to the Soviet Union for appropriate models of education Multipurpose universities were reconstructed along the lines of those in the USSR, as were secondary schools, elementary schools and kindergartens There was a major expansion in this period towards providing kindergartens for all young children ages three through six in rural areas as well as in cities A parallel expansion of kindergarten teacher training continued until the Cultural Revolution

Though kindergartens remained open during the Cultural Revolution,

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kindergarten teacher training all but stopped. Only one of the 19 kindergarten normal schools remained open, and that one did not train kindergarten teachers during that period.

Since the Cultural Revolution, there has been an expansion of kindergarten teacher training, with 28 kindergarten normal schools operating in 1979 and enrolling 9,000 students (*Chinese Education*, 1982). Kindergarten teachers are also trained in kindergarten classes found in some primary normal schools and in some vocational middle schools.

The Current State of Kindergarten Education

There were 172,262 kindergartens in China in 1985 staffed by over 775,000 teachers, directors and medical personnel. These kindergartens are considered educational institutions, in contrast with the nurseries which serve children below the age of three. Most kindergartens have separate classes for three, four and five year olds. Mixed age classes, however, can be found in small rural kindergartens. There are also boarding kindergartens, where children stay from Monday morning to Saturday afternoon each week. There are also kindergarten classes attached to some primary schools, much like the kindergartens in the USA.

Kindergartens may be sponsored by the local educational authority, the women's federation, the local township (formerly the commune), the work unit. Recently, private kindergartens have also been established. The curriculum is set by the State Education Commission (SEC), which while said to be suggestive, is widely followed even though there are no mechanisms to ensure compliance with it.

The kindergarten day may last from 7:30 am until 4:00 pm. It usually begins with a health check for the children, followed by time to care for the classroom: feeding pets, watering plants or dusting furniture. The formal curriculum includes lessons offered to children in six areas: Chinese language, mathematics, music, art, physical training and general knowledge (science and social studies). In addition, kindergartens provide opportunities for physical exercise, singing and dancing, arts and crafts and boht indoor and outdoor play. A hot lunch and morning and afternoon snacks are provided for the children, who also take a nap after lunch (Spodek, 1989).

Kindergarten standards vary widely in China, with higher standards found in the large coastal cities and the municipalities of Beijing and Nanjing, and lower standards found in rural and inland areas. There is a shortage of trained kindergarten teachers, and although kindergarten teachers are expected to be graduates of normal (secondary) school programs, less than 20% of the Chinese kindergarten teachers have even one year of training. There are major programs to provide these teachers with inservice training.

Normal school teachers are trained in normal universities. Since students in these universities are expected to be graduates of academic middle schools, they have seldom had any kindergarten teaching experience themselves.

Teacher Training

Most kindergarten teachers are prepared in kindergarten normal schools. Teacher training is also provided in kindergarten classes of some primary normal schools as well as in kindergarten training classes in vocational middle schools.

The normal school program combines general high school education with teacher preparation. The SEC specifies the subjects taught and the number of hours assigned to each subject. There are no electives included in the program, although some normal schools do provide clubs and special activities. the number of hours of general education was lowered in 1986 with no parallel increase in other parts of the curriculum.

The normal school program consists of four parts: general education, pedagogy (educology), teaching practice and the fine arts. While the general education provided is similar to that of senior middle schools (secondary schools) and the textbooks are identical, much less time is available for general education in normal schools. Some normal school teachers may skip portions of the course or schools may reduce instruction in mathematics and science while increasing instruction in art, music and language. Sometimes the general education content is tailored for intending teachers so that the science course deals with health and hygiene in the kindergarten, while the language course becomes a language arts course.

The pedagogy (educology) includes courses in child psychology and preschool education as well as in the teaching of language, arithmetic, science, music, dance and hygiene. The subjects are taught through lectures using national textbooks, though regionally developed textbooks are becoming more available.

Teaching practice for the student teachers includes observing children in schools, engaging in simulated teaching and teaching under supervision in schools. This latter process is often limited to about four weeks in the entire program. Students also watch demonstration lessons taught by exemplary or model teachers. In the simulations, students will prepare kindergarten lessons, complete with teaching aids, and teach their fellow students, who act as children.

The fine arts are an important part of the kindergarten normal school program. Instruction is provided in painting, singing, dancing and playing a musical instrument, typically piano, pump organ, or accordion. Students are often trained in adult performance skills, rather than skills which can be used directly in working with children (Spodek, 1988).

Problems in the Preparation of Kindergarten Teachers

There are several problems related to the preparation of kindergarten teachers in China. Some of these problems relate to the lack of resources in a developing country with a large population. Other problems are the result of educational policies established during the Cultural Revolution. Among the most pressing problems are the following.

The Lack of Training Resources. There has been a rapid expansion of kindergarten education in China since 1949. The expansion of teacher preparation for kindergarten has not kept apace, and the result is that most kindergarten teachers are not adequately prepared. Recently, there has been an increase in the number of kindergarten normal schools as well as kindergarten training classes in vocational schools. Inservice training programs have also been established to provide training for existing teachers. Normal university students are encouraged to go into the provinces and offer training courses during their school vacations. Remote teacher training, using television and videotape, is also being developed.

The Recruitment of Kindergarten Teachers. There is a concern that there are not enough applicants for the kindergarten normal schools. Parents consider kindergarten teaching as an appropriate occupation for young women. A woman trained as a kindergarten teacher has a good chance of being employed near home, which cannot be guaranteed for all individuals with advanced training. But enrolling in a kindergarten normal school denies an individual access to university education -- even in normal universities -- since these schools do not adequately prepare their graduates for the university entrance examinaitons. In addition, kindergarten teachers receive relatively low salaries. While the beginning salary is equivalent to that received by a factory worker, the kindergarten teacher cannot augment her base salary through the incentives of the responsibility system, which provides workers in other employment with wage incentives.

One way normal schools are coping with this problem is by admitting their students earlier than do the senior middle school. Individuals might be willing to accept a guarantee of admission to a normal school rather than risk not being accepted into a senior middle school. As yet, no additional financial incentives are provided to kindergarten teachers.

The Selection of Graduates for Teaching. Admission to kindergarten normal school is almost tantamount to graduation. While students' achievement is evaluated, students are not failed or dismissed. All graduates are placed as kindergarten teachers, even though the competence of some may be less than adequate.

The Model of Kindergarten Teaching. Chinese kindergarten teachers are being prepared to present lessons to young children. Teaching is viewed as a performance. Lessons are taught to the entire class, with all children sitting quietly, listening to the teacher's exposition. While illustrations may be provided, the lesson is a simple lecture. After the lecture, there may be activities in which the children participate, mainly to practice or illustrate the concept being presented. Given the conception of teaching, the simulations noted above, with novice teachers presenting lessons to their peers, functions well, since there is little opportunity to respond to feedback from children, or to deal with particular needs and interests in the lesson.

Reform in Preparation of Kindergarten Teachers

Changes are taking place in the preparation of kindergarten teachers today. Normal schools are modifying their selection and recruitment process. Some schools are also modifying their teaching by allowing more class discussion and doing less lecturing.

Some normal schools are establishing their own versions of the responsibility system in which they pay students differentiated stipends based upon an evaluation of their work and they give teachers bonuses if their students do well on examinations Schools are also becoming more flexible in allowing students to meet requirements through proficiency examinations and having students retained if their academic work is poor

One of the limits on the quality of teacher preparation may come from the fact that teachers in the Chinese normal schools have not taught young children themselves Those responsible for general education and performance classes have been trained as specialists in their own particular field Teachers of pedagogy (educology) have themselves been educated in normal universities, and they entered universities form upper middle schools Their only contact with kindergarten children would have been in a four week normal school Thus, while they know about education from the books they have read they lack the practical experience of teaching children in a classroom

Other changes which need to be made must wait for reform in the kindergarten There are concerns for the need to create a kindergarten educatin which will be more supportive of children's individuality and creativity (Wei, 1986) This would require major changes in Chinese kindergartens New ideals about kindergarten education and the preparation of kindergarten teachers are coming from the USA and other western nations

Currently (i e 1988) UNICEF is sponsoring a project among a number of normal schools and normal universities to improve the preparation of kindergarten teachers Teachers in participating universities are studying in colleges and universities in the USA and elsewhere, working towards advanced degrees, or spending shorter periods of time as visiting scholars. The ideas they bring back will certainly extend their educology of kindergarten and influence Chinese kindergarten education just as the ideas of progressive American kindergartens brought to China in the 1920s and 1930s had a major influence (Spodek 1989)

The sheer size of the Chinese population makes every educational problem a massive one The number of children who are and should be enrolled in kindergarten demands vast numbers vast numbers of teachers, far more than can be prepared today Even minor reforms will require the addition of significant resources to kindergarten and kindergarten teacher training programs in the years ahead

Early Childhood Education Reform in the USSR

At the time of the 1917 Bolshevik revolution the majority of Soviets were illiterate Since then, tremendous progress has been made toward literacy and universal public educaion A member of the Politbureau recently noted for example that over 60% of all working people in the USSR in 1984 had achieved a secondary or higher education (Aliyev 1984 28) Although illiteracy is rare, the USSR has recently recommended educational changes at all levels to create the types of highly educated people required in a technological society and a major world power

As in the USA, impetus for widespread educational reform in the USSR

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has come primarily from increasing public criticism of educational inequities and inefficiencies (Ivanov, 1987; Notkin, 1987; Matveyev, 1988; Tchernobrovkina, 1988). One example of this open criticism appeared in an article in a major Soviet newspaper on "The Draft Education Reform." This document clearly indicted Soviet schools for their poor teachers and instructional materials, outdated programs and rigid and restrictive curriculum (*Izvestia*, 1984).

In response to such criticism, and in recognition that future maintenance of a world power position is dependent upon an increasingly educated citizenry, a joint session of the Soviety of the Union and the Soviety of Nationalities of the Supreme Soviet of the USSR on April 12, 1984, adopted a set of guidelines for the reform of general and vocational education. Provisions of this document which concern the education of children and their teachers are explored below.

Preparing Teachers for Earlier Grades: Lowering the Mandatory School Age

As in the USA and elsewhere, the USSR maintains a variety of approaches to the education and development of children from birth through age 8. In addition to the *Babushka* (grandmother) caring for children at home, the USSR provides the *yasli* (nursery) to accommodate children from infancy through age 3, the *detskie sady* (kindergarten) for chidlren ages 4-6 and the more recent *yasli sady* (combined nursery and kindergarten) programs.

The number of schools for the very young has greatly expanded in recent years. In 1950, for example, there were 42,000 preschool programs serving 1.8 million children. In 1980, the number had increased to 127,000 preschools serving 14.3 million children (Ratliff, 1987). A similar expansion has taken place in public schools. Over the next 5 (1987-1992?) years, new preschools are to be built for an additional 7 million. This increase represents twice as many new schools as were constructed during the last 5 year plan (Aliyev, 1984:36).

Prior to reform mandates, early childhood education in public schools consisted of the 1-4 forms (i.e., children form ages 7-10). With recent reforms, mandatory school attendance has been lowered form age 7 to age 6. Prior to reform, it was estimated that over 17% of 6-year-olds were in general schools (Dunstan, 1985). As of September 1, 1986, all 6-year-olds were required to attend either public school kindergarten or senior group preschool programs. This rapid expansion of early education programs has led to major changes in the preparation and working conditions of teachers.

Teachers of Young Children in the USSR: Changing Conditions and Preparation

Recent guidelines gave much attention to the importance of developing a cadre of more competent teachers. Reforms are explicit, for example, in recognizing that any significant educational changes depends "to a decisive degree on teachers and on their ... professional skills, erudition and culture" (*Pravda*, 1984a:18). Seeing teachers as an integral part of the education reform movement, the Supreme Soviet established a number of long-range goals specifically for improving the education and professional status of teachers.

Expanded Periods of Training. The Supreme Soviet recognized that teachers need a higher degree of formal preparation than was reqjired prior to reform. Currently, over 60% of primary grade teachers have the equivalent of an American junior college education. Ninety eight percent of grades 4-11 teachers, in contrast, have the equivalent of our bachelor's degree (Kabachi, 1986). In recognition that "the most up-to-date knowledge and good practical preparation" (*Pravda*, 1984a:18) is unlikely to emerge from teachers with limited professional training, changes have been proposed in extending teacher-training by one year at universities and pedagogical institutes.

In addition to preservice education, reforms now call for a greatly improved program of in-service training. To this end, funds are to be allocated to

> expand and modernize institutes offering refresher courses for teachers ... as research and methodological centers [sic] for raising teaching skills, for summing up and disseminating advanced experience [*Guidelines for Reform of General and Vocational Schools*, 1984:72]

Teachers are to attend such programs at least once every 4 years.

Expanding Field Experience. Limited student teaching experiences were offered earlier, generally at the end of a program. With the current reform, students at pedagogical institutes and universities are required to have practice teaching experiences during each year of training (Long, 1985).

Curricular Change. Along with the addition of mandatory programs for 6-year-olds is the concomitant requirement of the development of unified curricula for these programs. Specifically, the guidelines call for

> A standard programme for the upbringing and instruction of children at kindergartens, which takes due account of child physiology and psychology .... [*Guidelines for Reform of General and Vocational Schools*, 1984:68]

Along these lines, Izervev et al. (1985) suggest that

> ... the curricula and teaching materials for school classes and preschool groups of six-year-olds should be maximally standardized, which means that one single set of teaching materials could -- indeed, should -- be used [p. 15].

These researchers go on to suggest that such guidelines do not require pressure-cooker, pre-academic types of programs. Rather,

> The syllabus and curriculum ... should provide for the incorporation of play activity, in all its varied forms, into the instruction and upbrining of six-year-olds [p. 15].

A promising feature of the proposed unified curriculum for the young is that it should take into account research-based information about the cognitive and developmental characteristics of younger children (Zverev, et al., 1985).

The mandate makes systematic use of traditional standardized textbooks and teaching methods unacceptable for 6-year-olds. As a result, major changes are under way regarding textbooks at the upper primary and secondary levels. Since pre-reform texts were viewed as outdated and difficult for many learners (Tchernobrovkina, 1988), the revision of these and other teaching aids are high on the list of reform priorities. Teachers and scholars are to represent the best in terms of research and efficient methodology (*Guidelines for Reform of General and Vocational Schools*, 1984).

Matveyev (1988) has suggested that standardizing the programs is likely to take some time because of strong resistance from parents and grandparents who are not yet convinced that 6-year-olds should even be in formal school programs. Furthermore, many of the new programs provide a curriculum based primarily upon play and home-life activities which have been common in Soviet preschool programs for years.

Unlike the USA, which has not consistently provided resources for a broad curriculum (especially resources in the arts), the USSR has been more consistent in its support of what in the USA is often called educational "frills." The new guidelines reinforce commitment to holistic education and the importance of extending education to the areas of ethics and aesthetics and increasing the numbers of after-school programs in Pioneer Camps, Clubs and Palaces of Culture (*Guidelines for Reform of General and Vocation Schools*, 1984). These after-school programs are generally supervised by practising artists.

Decrease in Class Size. Recognizing that high quality education is unlikely to emerge from traditionally large classes and high teacher-pupil ratios, the guidelines mandate that by 1989, "class size must be gradually reduced to 30 pupils ... in the primary grades and 25 pupils in the 10th and 11th forms [the 10th and 11th years of school]." (*Guidelines for Reform of General and Vocational Schools*, 1984:60). Matveyev (1988) indicated that the Soviets are aware that even 30 pupils per class is far from an ideal size; when further resources are available, this number will be significantly reduced.

Expanding Admissions for Teacher Training Schools. In the past, admission quotas have kept enrollment in teaching schools relatively stable. The recent expansion of early childhood programs that was mandated by reform guidelines has led to an increas in the number of students accepted into pedagogical schools which train primary and elementary teachers.

Selection of Future Teachers. As a result of an awareness that the quality of future educators must improve as their numbers increase, guidelines suggest that "A most important task of public education bodies and teacher training establishments is to select young people with a marked inclination for work with children" (*Guidelines for Reform of General and Vocational Schools*, 1984:72). Special attention is to be given to recruiting male teachers. At the early childhood level this issue gains importance since the most populous of the 15 Soviet Republics employs only

3 male kindergarten teachers (Matveyev, 1988, Techernobrovkina, 1988)

Attracting and Retaining Teachers Since the time of the Revolution, rhetoric concering the teaching professions has been laudatory. Nadezhda Krupskaya, prominent leader of the Soviet Communist Party and wife of Lenin, for example, described teaching as "one of the most important and most rewarding professions, the role and significance of which will never stop growing" (Aliev, 1984:38). Likewise, the *Guidelines* themselves suggest that

> The teacher in public education is the sculptor of the young personality, a person in which society has confidence, to whom it has entrusted the dearest and the most precious of its possessions -- its children" [*Guidelines for Reform of General and Vocational Schools*, 1984:71].

In spite of traditional rhetoric, however, teaching salaries in the USSR have not been commensurate with the espoused professional status. In 1984, the average monthly salary of public school teachers was 150 rubles. While considerably more than that paid to doctors and lawyers, this salary was still below the national average of 200 rubles per month. Perhaps because of this, the morale of many teachers has suffered in recent years.

An indication of this morale problem was seen in a recent synthesis of letters to the Soviet press concerning teaching from interested Soviet citizens. In this series of letters, L.V. Soboleva, for example, was quoted as saying upbringers [teachers] who [are working in the schools] are little more than "lackadaisical, lesson-dispensers" who "have ground their way through" their teacher training programs and into the schools (CPSU, 1984:91).

Clearly the espoused noble character of the teaching profession came under increasing attack in the early 1980's. To ameliorate this image problem, Chernenko urged the Central Committee, during its deliberations while drafting the reform guidelines, to

> raise and protect in every way possible the prestige of the teacher, and show constant concern for improving his working and living conditions .... [Chernenko, 1983]

Realizing that inducements would have to be created to attract and retain high quality teachers, the recent guidelines called for a phased 35% increase in salaries for public school teachers beginning September 1, 1984. In addition to more attractive salaries, those studying to become teachers after this date will receive a stipend equivalent to students in the highest paid professions, such as mining, petroleum and metalurgical engineers (*Pravda*, 1984c).

Along with the salary increase, reforms mandate that housing for teachers will have a high priority. In addition, if teachers opt to work in a rural area, credit and building materials for construction of a house are provided (Kabachi, 1986). Prior to World War II, Soviet citizens averaged 6 square metres per person of living space. The average is now 13 square metres per person. Although gains have been made in housing, Soviets often must wait several years for a flat or to trade housing. Since housing is at a premium, special housing preference is an important inducement for attraching teachers (Ivanov, 1987).

Comparisons

Over the past 75 years, both the People's Republic of China and the Soviet Union have realized tremendous social and educational accomplishments. Not the least of their successes has been their movement from feudal states with a high degree of illiteracy to modern socialist nations with few illiterate citizens. Nevertheless, recent forces have led to concern for wide scale educational reforms similar to those heard in the USA. American educators have identified a number of reform themes which they share with their Soviet and Chinese educatorcolleagues.

As in the USA, the belief exits in the PRC and USSR that successful educational reform can only result from changes in teaching and teacher education along with school reform. While the teaching profession itself has long been viewed as an honourable and critical occupation, societal rewards have not kept pace with the espoused professional status. Unlike the USA, the USSR now has a national program of increased pay for teachers. While this effort is intended to make the teaching profession more attractive, only time and future study will indicate if the measures applied result in an increase in the number and competence of teachers.

The problem of attracting and retaining teachers is found in both the PRC and USSR. The Chinese offer admission to teacher training schools prior to admission to upper middle school as a way of attracting teaching candidates. The Soviets offer other incentives, such as discounted food prices and preferential housing.

Reforms in the training of early childhood teachers are also being proposed in both socialist countries. Realizing that the traditional length of teacher training is no longer sufficient, both countries are calling for additional inservice preparation along with the expansion of inservice teacher training opportunities. In addition, these countries are creating an expanded research base to guide curriculum development in early childhood education. There is also a trend toward increasing practical classroom training through additional student teaching and other forms of practice.

What lessons can be drawn from the experiences of early childhood educators in these two socialist countries. Certainly no country should directly apply solutions from another country or try to recreate another country's experiences. The PRC and USSR are unique countries. Even though the current Chinese kindergarten is based on the Soviet model, kindergartens in China are very different from those in the USSR. China is still a developing country, with far fewer reouces available for human services than the USSR. In addition, the PRC and USSR each has its own culture, its own traditions, its own concept of family and of the role which early childhood education should play in society. Yet within these two countries, there are similar factors influencing early childhood education and similar processes relating to ways of dealing with educational concerns.

In both countries the increase in early childhood programs has resulted from the increased participation of women in the work force since World War II and a lesser reliance on extended families as providers of child care services. In addition, there is an increased belief in the importance of early childhood education found in each of the countries. Early childhood education hs been given a legitimate place in the spectrum of educational services which should be provided by society, along with elementary, secondary and higher education.

In both the PRC and the USSR, the early childhood curriculum is relatively rigid. It is based on prescriptions coming from a national authority. This is very different from the USA where there is local or state control of public education, including curriculum content. There is also little control in the USA of private education, and a large part of early childhood in America is in the hands of private enterprise. In the PRC and USSR there is a movement to reform the early childhood curriculum, not necessarily shifting control form the national authority, but designing programs which support the development of creativity and autonomy. This is in contrast to what seems to be happening in the USA, where kindergarten programs seem to be becoming more prescriptive and more concerned with academic readiness than creativity. Perhaps in all cases there is a move from the extreme. American kindergartens have earlier stressed creativity, while those in the PRC and USSR have been lesson-oriented.

Finally, in all three countries, there is agreement that educational reform cannot take place without improving the quality of teaching. The call for increased teacher education in all countries is evident, even though the level of preparation for public school teachers is presently higher in the USA than in either of the other two countries. The nature of the reform in teacher education, beyond the extension of years of preservice education is still not clear.

Conclusions

Significant changes are taking place today in early childhood education in both the PRC and the USSR. In many ways these changes parallel one another, although the systems differ, just as, while socialist, the cultures differ. These changes include the increase in the demand and provision of early childhood education programs, the call for a reform in the kindergarten curriculum, and a call for the increase in the quantity and quality of early childhood teachers. The changes noted parallel the changes taking place in early childhood education in the USA today.

While the solutions of other countries can not be applied to a third country, even though the problems may be similar, seeing what is happening in other countires gives a broader perspective with which to understand a situation. The lessons which can be learned from the two socialist countries of the PRC and the USSR are indirect ones, yet they can be significant ot early childhood educators who are open enought to study and understand the processes of change occurring in countries which may be vastly different.

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An Educology of Teacher Education: Redesigning Teacher Education for Technological Development in Nigeria

John O. Afe
College of Education, Ekiadolor
Benin, Bendel State, Nigeria

ABSTRACT

The success of any educational program is largely dependent on the quality of its teachers. It behooves teacher educators to design teacher education so that it is functional, relevant and practical to ensure the production in quantity and quality of high calibre teachers for our school systems. The need in Nigeria for good teachers is more critical in the area of technological education than in any other area. This is so because no technology, no network of institutions and no policy will work without qualified personnel. The 6-3-3-4 school system in Nigeria has been designed to reflect the philosophy and the needs of Nigerians, and it has been geared towards scientific and technological revolution. In response to this reform, teacher education needs to be redesigned. In this reformation, consideration must be given to all aspects of teaching, including recruitment and selection of teacher trainees, preservice teacher education, laboratory schools, in-service teacher education, social status of teachers and professionalizing teaching.

Introduction

Kotasek (1970) defined teacher education as

> such institutionalized educational procedures that are aimed at the purposeful organized preparation or further education of teachers who are engaged directly or indirectly, in educational activity as their life's work.

This concept includes members of other professions such as medicine, engineering etc. who prepare for teaching as secondary supplementary activity. The purpose of teacher education should be to produce highly motivated, conscientious and efficient classroom teachers. They should be embued with the spirit of enquiry and creativity, the intellectual and professional background for their assignment and a commitment to the teaching profession. It has also been generally acknowledged that no education system can rise above the quality of its teachers (National Policy on Education, 1981). Given this recognition, one would be justified in thinking that teacher education should be given top priority in the scheme of things. However teacher education problems are usually relegated to the background, and they have tended to be treated in an ex post facto manner. The result has been that other levels of education have been given prominence over teacher education. There seems to be a lack of realization that educational objectives and means cannot be changed without the education of teachers being changed as well.

The role of education in technological development is indisputable. Adams (1970) opined that education brings about social changes in attitudes, motivation and incentives which in turn lead to technological change and invention. While we accept that technological innovation is a sine qua non of the modernization process, we should not lose sight of the sociological and psychological implications which require structural adjustments, change of attitudes, development of new skills and new modes of life. Herein lies the importance of the teacher and in particular of training in the whole educational enterprise. Even with the best of educational policy and design and the expenditure of collossal sums of money for education, the ultimate realization of any set of aims for education depends on the teacher. The teacher will ultimately be the one responsible for translating policy into action and principles into practice. Hamilton (1956), writing about the Nigerian system of education, said:

> The system of training teachers is the keystone of any national educational system in a rapidly developing country such as Nigeria. The efficiency of teacher training will be the main determining factor, in the success or failure of education to meet the country's needs.

Thus, the central importance of teachers and particularly their training in the whole educational enterprise can hardly be overemphasized, as the proper preparation of teachers contributes to a more purposeful and better planned education.

It is in this light therefore that the main concern here is how to redesign teacher education for technological development in Nigeria. In doing this, an overview of the structures and forms of teacher education in Nigeria is presented with a view to highlighting areas which need to be redesigned to ensure technological development. Finally some recommendations will be made about how to improve teacher education in Nigeria.

Within the context of the argument being developed here, technology is considered as comprising of scientific concepts, skills, devices, tools and implements for the application of labour in the process of production of material needs of a society (Fagbemi, 1988). Development in its various common usages means progress, growth, change, industrialization, social and cultural transformation, mass literacy, vertical and horizontal mobility and employment opportunities (Iziren, 1975).

Overview of Teacher Education

Teacher education is a complex area conditioned by historical and social factors. In this section, a brief overview of teacher education in Nigeria since the advent of Christian missions to the present is traced. The early attempt at training teachers by the Christian missions marks the beginning of formal teacher education. In 1896, St. Andrew's College, Oyo, was founded by the C.M.S. Yoruba Mission (Adesina, 1977). Thereafter,

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other mission colleges, such as the Baptist Training College, Ogbomosho in 1897, Wesleyan Training Institute Ibadan in 1905 and U.M.C. Ibadan in 1928 and St. Charles Training College, Onitsha in 1929 were opened. Colonial government interest in teacher education was expressed mainly through the Education Ordinances. In 1919, Lord Lugard in his Education Policy granted more privileges to the missions, provided they complied with the rules and regulations laid down by the government regarding the organization and administration of the mission schools. Eventually, teacher education became a recognized public service, dually controlled by government and private agencies, but with the government being the major shareholder and with the greater statutory powers. Thus, it can be concluded that it was the missionaries who set the professional standards for teachers and for the curriculum to be taught in schools.

As Solarin (1964) pointed out, in most countries of the world the provisions for adequate facilities and finance for teacher education has lagged behind the provision for other fields of education. In other words, teacher training problems have tended to be given less sustained attention than those of secondary education. In fact, it can be fairly said that teacher education is the one least crystallized part of the Nigerian educational system. The consequence of this neglect was noted by the Ashby Commission (1960), which realized that the whole educational structure must rest on a solid base of sound teacher education and recommended measures for reforming teacher education. Also the 1969 National Curriculum Conference described the teacher as the "Key person in the entire educational programme and observed that the quality of his training makes or mars the end result of his job as a teacher." The various National Development Plans stressed the importance of teacher education to national development. All these were verbal declarations, but beyond rhetoric and in concrete terms, funding continued to be grossly inadequate.

In the scientific and technological revolution now going on in the world, Nigeria should not be a mere spectator watching America landing on the moon, satellites surveying the planets, newspapers being simultaneously printed on two continents, babies being conceived in test-tubes, nor can she fold her hands while rice, building materials, chemicals, drugs, ships, planes, cars, computers, etc. are imported. This is the time that Nigeria must work out her own salvation, through massive investment on programs of technological development. This was what Russia did after the First World War, similarly with Japan, China, Brazil, Mexico and Venezuela.

From the very beginning, technological education in Nigeria was treated as a relatively insignificant aspect of the country's educational system, and this was reflected in the various Education Ordinances. Section 6, Subsection 47, of the national policy on education noted that "government deplores the general public attitudes which regards technical education as somewhat inferior to other types of education." This antipathy towards technical education dates from the beginning of modern education. It is my view that a change in attitude of the general public towards the revolutionary need for technical education must take place, and the government needs to use all the mass media available to it to secure community support. This public enlightenment program must be supplemented with financial motivation, fringe benefits and other inducements to teachers and students alike. For if we are to achieve our goals of a scientifically and technologically oriented society, we need to heed the admonition of William Castetter (1971:4) that while we accept that school facilities are important, that organizational purposes and leadership are essential, that money and well designed instructional programs are both vital and a sine qua non, the most crucial single element in the educative process is the teacher. This is very true for the implementation of the 6-3-3-4 system,[1] where the Universal Primary Education and the consequent expansion of the two tier secondary education call for a great demand for teachers, with a wide range of specialization in science, technology, business and agriculture. According to Brembeck (1971) for such teachers to be successful, they must be willing to work in a changing school environment, where the emphasis will be on creating new ways of teaching for new ways of learning. Unfortunately, there are some problems of teacher education which need to be solved to achieve our goal of technological development. According to Ukeje (1986), many of the problems in Nigeria emanate from our historical past. These include the organization and the structural relationships among various types of teacher education, curriculum, effectiveness of teacher preparation and adaptation to rapid social changes and scientific progress. The World Confederation of Organization of the Teaching Profession (WCOPT, 1961) reported on the status of the teaching profession in Africa and observed that the status of the teaching profession in Africa was low. It also noted that recruitment had been haphazard, and training had been inadequate. These same problems plague the teaching profession in Nigeria in 1990. What remedies might be effected to alleviate these problems and to facilitate technological development in Nigeria?

Broadening of Teacher Education Programs

In the National Policy on Education, Section 9, Subsection 63, recommends that the curriculum of teachers colleges at all levels continues to be structured on the following components:

(a) General Studies (basic academic subjects),
(b) Foundation Studies (principles and practice of education);
(c) Studies related to the students' intended field of teaching (e.g. English, History, Mathematics, Physics, etc.),
(d) Teaching Practice

General Studies

This aspect of the program is variously known as General Education or Liberal Studies including basic skills. The concept is based on the principle that there is a body of knowledge with which all educated men and women, including future teachers, should be acquainted. Allen and Hawkes (1970) identified liberal education as an important component in the program of teacher education for technological innovation. Since the 6-3-3-4 system entails enlarged curriculum at all levels of the educational system, any general education should be broad based covering the humanities, the social sciences and the natural sciences. The implication is that we need teachers of wide specialization who would be able to discuss scientific issues intelligently in this scientific age. Teachers with a narrow specialization are likely to do much harm to the students.

Foundation Studies

This component is also known as professional education or foundational studies. It is the educological part of the curriculum for teacher education. The professional courses in education, i.e. the educology, plus the teaching practice do not by themselves constitute the preparation of teachers. Rather, the general and the specialized subject matter competence, in addition to the educology courses, constitute the full preparation of the teacher. Thus, the professional component of teacher education should emphasize a deep theoretical and applied knowledge of children's development, guidance and counselling, learning theories and a good foundation in effective teaching of the subject matter and supervised internship in general school administration, classroom teaching and the organization of out-of-class learning activities. The question of what constitutes good professional training for the teacher has been debated, and opinion differs as to what constitutes a balanced program. However, what is to be noted is that the three components, general education, nature and content of the subject matter and professional education (i.e. educology), are not mutually exclusive.

Recruitment and Selection

The recruitment of competent people into the teaching profession is a perennial problem all the world over. This situation is not unique to Nigeria. If the profession is to be accorded high status, there is need to attract high calibre teaching personnel who would improve the quality and productivity of our school system. As Coombs (1968) put it,

> Education is both a producer and a consumer of high level manpower. If it is to serve all other consumers of manpower well and each generally better, it must consistently recoup enough of its own best output to reproduce a good further crop.

Therefore the basic approach to quality and excellence in teacher education is the application of a carefully developed curriculum for teacher education and enforcement of rigorous criteria for selection and admission of talented people to teacher education. A rigorous adission procedure is a means of making certain that teacher education will secure its fair share of the best students. There is a need for concerted effort to upgrade the calibre of students admitted to teacher education by members of the profession and endorsing agency.

Social Status of Teachers

Before ensuring high calibre students into the teaching profession, there is need to improve the social status of teachers. Fanfunwa (1967) identified five categories of teachers to be found in Nigeria:

(1) those who are convinced that teaching is their calling and that they can best serve their country in that capacity;

(2) those who choose teaching and find satisfaction in it as compared with other occupations;
(3) those who join the teaching profession from necessity rather than from choice;
(4) those with poor academic records, but who have had secondary education; and
(5) those who have not been to secondary schools because of their inability to pass the entrance examination or because of lack of opportunity to do so in the past.

This medley of teachers in our schools today constitute the root of the problem of the recruitment of competent teachers into the profession and the low status accorded it. Thus, there is need to reduce the categories and levels of teachers. Ukeje (1986) proposed the merger of Grade II and the NCE into one Unified Three Year Post Secondary Program leading to a Certificate in Education for all primary school teachers. Afe (1989) judged that more Colleges of Education within and/or outside the universities should be upgraded to run the B.Ed./B.A./B.Sc. (Ed.) degrees as practised in Britain and the USA. He also predicted that with Colleges of Education operating the University Salary Structure (USS), they would eventually attract sufficiently high calibre lecturers to enhance the academic programs without necessarily being affiliated to universities. Consequent to this suggestion, it is my considered view that the Colleges of Education/Advanced Teachers Colleges and universities should be the only institutions to produce teachers for all categories and levels.

Teaching as a Real Profession

It is rather ironic that of all the world's leading professions, medicine, law, theology, engineering, architecture, dentistry, etc., the teaching profession which trains personnel for its own occupation as well as for all other professions, has the shortest period given to professional training. In order therefore to ensure parity in status with these other professions, there is need for parity in education and training of teachers. Thus a good professional education for teachers should have a longer period of training. There needs to be a strong professional organization which jealously guards standards of entry, an extended length of training, an appropriate code of ethics and a set of good terms and conditions of service. Therefore, it is recommended that all teacher education degree programs should be for a minimum of five years after a good secondary education of four years after Advanced level of qualification. One year of the five should be for intership in laboratory schools.

Establishment of Laboratory Schools

A review of the literature on theories of teacher education shows that the common feature is the emphasis on training as a vital component of professional teacher education. As Malikail (1970:163) put it,

> The question of how a prospective teacher should be educated has been answered in different ways by different men. But there has been one point of agreement even among those holding divergent views. This is that an essential component of teacher education should be practice teaching under supervision.

Since teaching practice is a significant professional component of the teacher education program, its organization should be such that at the end of the exercise, student teachers are equipped with the knowledge, skills and competencies for teaching, for teaching practice is to the prospective teachers what internship is to the medical practitioners or apprenticeship to the technicians.

Earlier on the recommendation was made for parity in length and rigour of teacher education and training with other professions so that there would be parity in status with other professions like law, medicine and engineering. Therefore it is being suggested that laboratory schools where young teacher interns go through several months of laboratory experience, practising the various skills of the teaching-learning process, should be established for the actual development of teaching competencies and for the effective integration of theory and practice. By this arrangement, teaching can claim to be a full fledged profession.

In-service Education of Teachers

Teacher education has two components: pre-service and in-service. To redesign the pre-service program without improving the quality of the in-service component is to create a hiatus in teacher education. It is now generally recognized that teacher education must be conceived as an extended process within which the pre-service course can be regarded as no more than an initial training and that the staff of teacher education institutions will be required in the future to assume wider responsibilities. The pace of changes and knowledge explosion put greater demands on teachers to sharpen their present skills and to develop new proficiency by remaining students all their lives. Socrates exhorted his friends that the good teacher is one who knows that one's education has scarcely begun at the point of leaving the university or training college (Castle, 1961). By implication, teacher education is a life time process. Thus, teaching, when compared to other professions, has a historical commitment to the ongoing development of professional competence and also provides opportunities for advanced study, both of a formal and an informal nature. Therefore, in-service training programs should be organized periodically at local teacher training institutions, including universities, and state level using both (a) general in-service training guidelines and (b) specific subject area in-service guidelines which would keep the teachers abreast in their areas of specializaiton and responsibilities.

The Teacher and Technological Innovation

From the foregoing, areas where changes are required in teacher education to facilitate technological development have been identified and suggestions offered. For a nation which is determined to develop scientifically and technologically, reform in teacher education is imperative. No amount of tinkering with the teacher education curriculum or reshuffling of courses and credits, as important as these may appear, is likely to result in the needed quality in teacher education. Similarly, good intentions are of little value, unless they are followed with constructive planning and backed by the means, the people and the materials to make these plans work (Hawes, 1972). It is said that education unlocks the door to modernization, but it is not often realized that it is the teacher who holds the key to the door. Since teacher education is the foundation of quality in the schools, the adequate preparation of the teaching personnel is very desirable. The society and the schools are changing. This is equally true of the curriculum, functions of the teacher and the whole concept of teaching. These changes have inevitably and invariably necessitated corresponding changes in the programs and processes of teacher education and training all the world over. Innovation properly viewed implies change plus progress. To innovate therefore is to change something for the better. The increasing demand for relevance and efficiency in our educational system is a must as we cannot use yesterday's tools to solve today's problems and hope to survive as a nation. Thus, the leaders of today need greater depth of knowledge, increased skill in teaching, right attitudes and improved human relationships.

Conclusion

A strong case has been made here for the redesigning of teacher education for technological development in Nigeria. Teachers were described to constitute the most vital factor in any educational system in this age of technological develogment. Upon their number, devotion and quality, the effectiveness of all educational arrangements must chiefly depend. As change agents, they would be expected to translate policy into action and principles into practice.

Since the 6-3-3-4 system is geared towards scientific and technological revolution, the case for excellent teachers of wide specialization and who can stimulate and inspire their students was made. For such teachers to be successful, they must be willing to work in a changing social environment where the emphasis will be on creating new ways of teaching for new ways of learning.

Reform in teacher education is imperative. Good intentions and verbal platitudes are of little value, unless they are followed up with constructive planning and backed by the means, the people and the materials to make the reforms work.

Footnotes

1. The 6-3-3-4 System is another name for Nigeria's National Policy on Education (NPE). It is a short form of writing six years of primary school, three years of junior secondary school, three years of senior secondary school and four years of university education.

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The Educology of Theory Development: A Touchstone Approach

Bevis Yaxley
University of Tasmania
Hobart, Tasmania, Australia

ABSTRACT

The main concern in this analysis is with establishing a touchstone approach to the development of educological theory. This approach is developed within a framework of a coherentist epistemology, and it proposes consistency, coherence and practical plausibility as indicators of progress in theory development. The touchstone approach leads to the use of repertory grids, which serve several purposes. Their uses include the representation, examination and interpretation of the theoretical claims, methodologies, principles, processes, beliefs and values which underlie and are implied by educological theories. In this analysis, the touchstone approach is illustrated by reference to teachers' theories of teaching, but the touchstone approach may be used for the development of theories about any set of phenomena within the educational process.

A Touchstone Approach

This analysis has as its main concern the establishment of a touchstone approach to the development of educological theory. Educological theory is theory about educational phenomena, and educational phenomena are any events, relationships, entities or processes which occur or exist within the process of guided study. Any educological theory has a theoretical basis, and that basis consists of underlying epistemological presuppositions and beliefs. The first section of this analysis is devoted to identifying these assumptions and beliefs.

Foundationalist and Holistic Epistemologies

The justification of decisions made by a teacher about teaching may be made on the grounds of what the teacher claims to know about teaching. Thus a teacher may attempt to justify a decision to adopt a group-teaching approach on the basis of a claim to know that the students in the class learn more effectively when working cooperatively. That is, the justification of this decision is based on a particular knowledge claim. In general, the justification of such decisions will be based on a knowledge claim, or set of knowledge claims.

For each such claim, three key questions may be asked:

(1) How did the teacher come to know what is claimed to be known?

(2) What are the grounds on which this knowledge claim is to be justified?

(3) Is this knowledge claim true?"

The first question concerns how we learn, or discover knowledge, whilst the second concerns justifying the claim to know something.

> Theories of knowledge, or epistemologies, have relevance to many issues including curriculum and pedagogy. But the major concerns for all epistemologies are two questions: "how do we come to know what we know, if we know anything at all?" - the question of learning or discovery; and "when may we rightly claim to know something?" - the question of justification. [Walker and Evers, 1983:26]

It is beyond the scope of this analysis to discuss extensively the range of theories of knowledge which have been proposed in attempts to answer these two questions. Broadly speaking, these theories can be classified into two groups, according to the answers they propose to the above questions. These groups are foundationalist and holistic, or coherentist, epistemologies.

Whilst foundationalism may take different forms, its central theses are, according to BonJour (1985), the two-fold theses

> (a) That some empirical beliefs (knowledge claims) possess a measure of epistemic justification which is somehow immediate or intrinsic to them, at least in the sense of not being dependent inferentially, or otherwise, on the epistemic justification of other empirical beliefs (knowledge claims); and
>
> (b) That is these "basic beliefs" (knowledge claims), as they are sometimes called, which are the ultimate source of justification. [BonJour, 1985:17].

Foundationalist epistemologies trace the justification of all knowledge claims back to a foundation, or base. This foundation, itself, needs no further justification. That is, there is an authoritative foundation against which all knowledge claims can be considered for justification. Foundationalist epistemologies will differ, mainly, in the nature of this authoritative foundation.

For a rationalist epistemology, this foundation is pure reason. That is, all claims to knowledge are decided upon, and justified, in terms of reason alone. In contrast, an empiricist epistemology has as its foundation the evidence of the senses. Rationalist and empiricist epistemologes are foundational.

The main difficulty with foundationalist epistemologies lies in justifying the authoritative foundation on which they are based. If, for example, a reason is given for accepting, as in empiricist epistemologies, the evidence of our senses, then justification can be sought for that reason, and so on. If an epistemological foundation is to be found, this infinite regress of reasons must be halted. Moreover, it must be halted without circularity, without defining knowledge in terms of further knowledge, or justifying sensory evidence by reference to other sensory evidence. Such circularity prevents the establishment of an epistemological foundation.

The thrust of a foundationalist epistemology is to discover or come to know or learn the foundational set of knowledge claims or beliefs, to justify all other knowledge claims inferentially from these, and to equate the pursuit of truth with the discovery and justification of these basic knowledge claims and the valid knowledge claims which can be inferred from them. For a foundationalist epistemology, the key questions to be answered with respect to a set of knowledge are of the form:

(1) Which knowledge claims are inferentially dependent on which other knowledge claims, and how?
(2) How is each claim inferentially linked to the basic (foundational) knowledge claims?

Answering these questions helps establish an inferentially linked hierarchy of knowledge claims. Thus a theory becomes an inferentially linked hierarcy of knowledge claims. Knowledge claims are inferentially dependent.

Alternatively, non-foundationalist epistemologies reject the notion of an authoritative foundation for all knowledge. In particular, holistic epistemologies differ from foundationalist epistemologies in that, rather than attempting to justify particular individual knowledge claims, by reference to some foundation, the basic units of knowledge are considered to be not individual claims, but whole sets of claims, or theories. Thus knowledge claims stand or fall as a whole. From a holistic perspective, claims are accepted or rejected, not by reference to some authoritative foundation, but in terms of their coherence with the rest of our current knowledge.

For holists, theories are whole sets of coherent knowledge claims. Clashes between theories and newly derived evidence will, in the the first instance, be resolved by adopting the most coherent solution. Clashes between competing theories, which propose alternative solutions to the same problem, will be resolved similarly.

For foundationalists, any clash between theory and evidence is resolved by giving ultimate priority to some foundation. For holists, there is no such priority. If theory and evidence clash,

(1) the theory may be revised to give a more coherent fit with the evidence,
(2) the evidence may be reviewed,
(3) the theory may be revised to discount the evidence or
(4) both theory and evidence may be revised.

There are no *a priori* reasons to favour evidence over theory, and so on. In all cases, what is being sought is the integration of theory and evidence to produce the most coherent new theory.

For holists, theory and evidence are interdependent. Thus what is, in the first place, admitted as evidence in support of, or against, a theory will depend upon the assumptions underlying the theory. That is, evidence will always be theory-laden.

A coherentist epistemology denies any relationship of epistemic priority or posteriority essential to a hierachy of knowledge claims. Knowledge claims are not linked in a linear or hierarchical order of inference such as when knowledge claim A implies knowledge claim B, which in turn, implies knowledge claim C. Rather, knowledge claims are inter-related within the totality of knowledge claims being considered.

That is, they are dependent upon one another, but are not linked through inference. They are reciprocally dependent within the total set of knowledge claims. The critical property of such a set of knowledge claims, which is appealed to as a basis for justifying these claims, is its coherence. In this case, a theory is a set of coherent knowledge claims, which are reciprocally dependent on one another.

For a coherentist epistemology, the reciprocal dependence between any two knowledge claims, or any two sets of knowledge claims or theories, can be established by contrasting them, that is, by considering the differences and similarities between them and in particular between the various knowledge claims constituting the theories being considered. Thus investigating reciprocal dependence implies seeking answers to the following questions:

(1) In what ways are the two knowledge claims similar, in agreement or overlap?

(2) In what ways are they different, in disagreement, or do not overlap?

Answering these questions helps establish the coherent overlap between the two knowledge claims, or theories. This overlap is a new knowledge claim or theory. Hence, for a coherentist epistemology, theory development proceeds by forming coherent overlaps between competing theories, that is, by proposing alternative solutions to a particular problem.

A foundationalist epistemology involves linking knowledge claims and theories inferentially. A coherentist epistemology involves linking competing knowledge claims and theories reciprocally.

For a coherentist epistemology, theory development is considered in terms of competing educological theories, that is, in terms of theories directed towards solving the same educological problem. My purpose in this analysis is to develop an approach to theory development based on the coherent overlaps of competing theories, and I give the name *touchstone approach* to this approach to theory development.

Touchstone Approach to Theory Development

If a holistic epistemology is adopted, the major task in developing theories, that is, whole sets of knowledge claims, is to find the coherence between theory and evidence and to facilitate the choice of theories in terms of their increasing coherence. That is, what is needed is

> a non-foundationalist set of coherence-producing procedures to facilitate theory choice and deal with evidence. [Walker and Evers, 1983:27]

Walkers and Evers (1983) suggest as a "means of applying Quinean coherence theory" an approach "based on the identification and development of 'touchstone theory'" (borrowing the term *touchstone* from Lakatos, 1970).

For them,

> Touchstone consists of the overlap between competing theories, such as common theoretical claims and methodologies, and findings produced through the application of such methodologies -- evidence. [Walker and Evers, 1984:27]

The first task is to find such overlaps in theory, and in evidence.

At a very general level, the acceptance of any theory involves accepting a certain amount of logic and mathematics, as well as semantic assumptions about terminology. [Walker and Evers, 1983:27]

The touchstone, or overlap, can never be foundational. The touchstone between competing theories is that "shifting and changing body of claims, methods and findings shared by competing theories" (Walker and Evers, 1983:27). This overlap, or touchstone, is always relative to these theories as they stand at any particular time. Similarly, the touchstone for a set of theories in one context will not necessarily be the same as in another context. The overlap for a given set of educological theories could be different depending on whether these theories are being considered in relation to for example primary or secondary schooling.

The touchstone approach to theory development focuses on agreements and disagreements between theories, methods and findings. It assumes open competition between theories conducted in an open-minded way (Walker and Evers, 1983).

For the touchestone approach, the search for knowledge is through a problem-solving approach. Knowledge grows through attempts to solve shared problems. Such problems will be identified by applying our current whole sets of knowledge claims, or theories, to the present situation. Touchstone theory assumes a holistic epistemology, and it is self referential.

In summary, the touchstone approach to theory development has the following characteristics.

1. It is concerned with finding coherent solutions to shared problems.
2. Touchstone is the overlap between competing theories.
3. The touchstone approach can be used to develop new theories, which give more coherent solutions to shared problems.
4. Because such touchstone theories can be constantly revised, they can never be foundational.
5. The development of theories using this approach allows for communication and cooperation, and, hence, progress in theory development.
6. Theory development gives a high priority to agreement and disagreement amongst those who are working on theory development.
7. Theory development requires open-minded competition between competing theories.
8. The integration of new evidence into the general fabric of our knowledge can proceed rationally and objectively by seeking logical consistency for theories.
9. The search for knowledge is through the search for solutions to shared problems.
10. This approach assumes a holistic epistemology. Knowledge claims are, therefore, self-referential. [Yaxley, 1987:38]

Identifying the Touchstone between Competing Theories

Suppose A, B and C are three proposals for the solution of the same problem. That is, they are competing theories. In applying the touchstone

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approach to the development of a more coherent theory from these three theories, the touchstone among them must be identified. This can be achieved by considering the theoretical claims, presuppositions, beliefs and values which commonly underlie each of these theories. The task is to find increasingly coherent theories from the competing theories by considering their touchstone, that is, by considering the overlapping theoretical claims, methodologies, presuppositions, values and beliefs which underpin each of the three theories.

This process can be commenced by asking whether any two of A, B and C are in close agreement in what they propose for the solution of the problem being considered, that is, by considering their overlapping theoretical claims, methodologies or processes, and underlying presuppositions and beliefs. Suppose A and B are considered to be the pair most in agreement.

To identify the touchstone between these theories, two key questions need to be asked. These are:

1. What is the overlap between A and B?
2. What is the non-overlap between C and the pair A and B?

The answer to the first question will indicate the overlap in, for example, common theoretical claims, principles, processes, presuppositions and beliefs between A and B, whilst the answer to the second question will show the way in which C does not overlap the pair A and B, that is, the theoretical claims, and so on, which relate to C, but to neither A or B.

Illustrating the Touchstone Approach

To illustrate this process, a group of teachers was asked to consider their teaching of a particular class of students, for whom they were currently responsible. This class was designated as the focus class. Each teacher was asked to state what they considered to be the conditions which have to be followed for effective teaching to take place for that class.

Whilst all the teachers involved made such sets of statements, the touchstone approach to theory development will be illustrated by reference to the statements of one teacher only. For the selected focus class, this teacher stated the following conditions for effective teaching:

Effective teaching occurs when:
E1: Flexible teaching styles are used;
E2: It is based on student needs;
E3: Careful teacher pre-planning is undertaken;
E4: Students are self-motivated;
E5: Students are grouped according to their learning difficulties;
E6: The teacher models appropriate learning processes.

Each of these statements, E1 to E6, is a claim on the part of this teacher to know something about effective teaching for this focus class. Each statement is both a knowledge claim and a theory about effective teaching.

According to the touchstone approach to theory development, this set of theories can be used to develop further theories by considering the overlaps, or touchstones, between them. Further theories of effective teaching can be evolved by considering the touchstones between theories E1 to E6.

To begin with, consider theories E1, E2 and E3.

E1: Teaching is most effective when flexible teaching styles are used.
E2: Teaching is most effective when it is based on student needs.
E3: Teaching is most effective when careful teacher planning is undertaken.

To commence the exploration of the touchstone among this triad of theories, select the pair of theories which are most similar, that is, which share theoretical claims, beliefs, presuppositions, and so on. Suppose E1 and E2 are selected as this pair. We ask what is the touchstone of these two theories of effective teaching. The answer may be that, for example, both of these statements presuppose a student-centred approach to teaching. The presupposition is that "Teaching is most effective when it is student-centred."

Now consider the third statement, namely, "Teaching is most effective when careful teacher pre-planning is undertaken." What presuppositions, theoretical claims, and so on, are implied by this statement? Which are not implied by the other two statements? Suppose the answer given is "Teaching is most effective under teacher direction," which may imply some lack of consideration for student needs, perhaps.

This pair of statements, "Teaching is most effective when it is student-centred," and "Teaching is most effective under teacher direction," is the first bi-polar construct elicited from the set of theories E1 to E6. The first statement of the construct is called the initial pole, whilst the second is called the emergent pole. The initial pole indicates those theoretical claims, processes, principles, presuppositions, values and beliefs which are common to E1 and E2, whilst the emergent pole represents those which are not shared by E1 and E2, but by E3.

Using this triad method, further constructs can be elicited by choosing differing triads of statements from the set E1 to E6. In this way there are a possible 20 such triads, and hence constructs, available. In practice, not all triads would be helpful in generating constructs. In this case, a further five constructs were elicited.

C1: P1: Teaching is most effective when there is interaction between the teacher and the learner.
P2: Teaching is most effective when the learner initiates the learning.
C2: P1: Teaching is most effective when learner attitudes are correct.
P2: Teaching is most effective when the relationships between the teacher and the learner is developed.
C3: P1: Teaching is most effective when it is learner-centred.
P2: Teaching is most effective when it requires teacher input.
C4: P1: Teaching is most effective when it focuses on the whole child.
P2: Teaching is most effective when it focuses on specific developments.
C5: P1: Teaching is most effective when it is based on practical experiences.
P2: Teaching is most effective when it precedes practical experiences.
C6: P1: Teaching is most effective when the learner is actively involved.
P2: Teaching is most effective when the teacher models the learning

processes.

These elements and constructs can be displayed in the form of a grid. This grid is, after Kelly (1955), called *a repertory grid*.

Repertory Grid

INITIAL POLE	E1	E2	E3	E4	E5	E6	EMERGENT POLE
C1 P1							C1 P2
C2 P1							C2 P2
C3 P1							C3 P1
C4 P1							C4 P2
C5 P1							C5 P2
C6 P1							C6 P2

To obtain a representation of the touchstone between the various elements, a variety of procedures have been developed. In this case, consider each element in turn. For the first element, consider which of the two poles of the first construct is closest in meaning to that of this element. Matching with the initial pole of the construct can, for example, be indicated by a tick (/), and matching with the emergent pole with a cross (x). If this process is repeated for all of the elements, the matches in meaning can be displayed on the repertory grid. For the above elements and constructs, the completed grid was as follows.

Figure 2: Matching elements and initial and emergent poles

Elements

INITIAL STATEMENTS	E1	E2	E3	E4	E5	E6	EMERGENT STATEMENT
C1 P1	✓	X	✓	✓	X	✓	C1 P2
C2 P1	✓	✓	✓	X	X	✓	C2 P2
C3 P1	X	✓	X	✓	✓	X	C3 P1
C4 P1	X	X	✓	X	✓	✓	C4 P2
C5 P1	✓	X	✓	✓	✓	X	C5 P2
C6 P1	X	✓	X	X	X	✓	C6 P2

The pattern of ticks and crosses displayed indicates the touchstone for both the elements and constructs. In particular, the completed grid can be examined for the touchstone of pairs of elements and pairs of constructs.

Consider, for example, columns E1 and E3 in Figure 2. For these columns there are matching pairs of ticks in rows C1, C2 and C5, and matching pairs of crosses in rows C3 and C6. In all, these columns match for 5 out of a possible 6 times. Thus, there is a significant touchstone, as indicated by the high correlation, for elements E1 and E3. That is, the statements E1 and E3 have been interpreted as implying similar theoretical claims, presuppositions and so on.

In particular, this touchstone or overlap in theoretical claims, presuppositions, methodologies and so on will be described by the matching construct poles, namely C1:P1, C3:P1, C2:P1, C6:P2 and C5:P1. These five statements describe the touchstone of the theories of teaching, E1 and E3.

Thus the touchstone of the statements,

S1: Effective teaching occurs when flexible styles are used,
S2: Effective teaching occurs when it is based on student needs,

is the set of statements

C1: P1: Teaching is most effective when there is interaction between the teacher and the learner,
C2: P1: Teaching is most effective when learner attitudes are correct,
C3: P1: Teaching is most effective when it is learner-centred,
C4: P2: Teaching is most effective when the teacher models the learning processes.

Thus the touchstone brings together the notions of teacher-learner interaction, learner attitudes, student-centredness and modelling the learning processes. These statements should imply similar theoretical claims, methodologies and so on. The teacher should now be challenged to interpret this implication. Why is it, for example, that interaction between the teacher and the learner is linked with, for instance, the teaching being learner-centred? What link is there between learner attitudes and the teacher modelling learning? Attempting to answer these questions will require the teacher to consider what theoretical claims are being made about teaching, what values are being assumed, for example, concerning how students learn and are motivated, how they justify their claims to knowledge and how students should be treated in a morally responsible way. In particular, the process of interpreting the touchstone between these competing theories, should lead the teachers to consider questions relating to the nature of the knowledge being taught, the nature of the learner and indeed the nature of person-hood and the nature of society.

Representing the Touchstone

By counting the pairs of matching construct poles for each possible pair of elements or theories of teaching, a correlation matrix for the elements of the grid can be obtained. Thus E1 and E2 match in 2 cases, E1 and E3 in 3 cases, E1 and E4 in 4 cases and so on. This matrix indicates the touchstones between all pairs of elements or theories of teaching. For the above example, this is given as below:

Figure 3: Correlation Matrix for Elements

ELEMENTS	E1	E2	E3	E4	E5	E6
E1		2	5	4	2	3
E2			1	2	2	3
E3				3	3	4
E4					4	1
E5						1
E6						

In a similar way, by comparing matching pairs of ticks and crosses for pairs of rows representing pairs of constructs, a correlation matrix of constructs can be produced. This indicates the touchstones between the various pairs of constructs. For the above example, this is shown below:

Figure 4: Correlation Matrix for Constructs

Construct	C1	C2	C3	C4	C5	C6
C1		4	1	3	4	2
C2			1	3	2	4
C3				2	3	3
C4					3	3
C5						0
C6						

Interpretation of the Touchstones of Competing Theories of Teaching

The interpretation of these correlation matrices should focus on both the high and low correlations of pairs of both elements and constructs. In the example given, with 6 elements and 6 statements, correlations there are high correlations between E1 and E3 and low correlations between E2 and E3, E4 and E6, E5 and E6, C1 and C3, C2 and C3 and C5 and C6. A high correlation indicates a substantial touchstone between these theories of teaching, whilst a low correlation indicates little commonality in theoretical claims, presuppositions and so on. Consider the high correlation between E1 and E3. That is, there is a high correlation between the statements, "Teaching is most effective when flexible teaching styles are used," and "Teaching is most effective when careful teacher planning is undertaken." The teacher proposing these theories of effective teaching must now consider why these two theories are highly correlated. What is it which, in the mind of the teacher, links these two theories? What assumptions and beliefs, for example, may underlie this high correlation? Is the teacher, for example, assuming that good planning always involves the use of a range of teaching styles? What is the touchstone of beliefs, theoretical claims, presuppostions and so on for these two theories of teaching, namely E1 and E3?

Similarly, why are E2 and E3 apparently not overlapping? That is, in what ways do the theoretical claims, presuppositions and so on underlying E2 differ from those underlying E3? "Teaching is most effective when it is based in student needs," has a limited touchstone with "Teaching is most effective when careful teacher planning is undertaken." Does this imply that teacher planning does not recognize student needs? What are the underlying assumptions and beliefs of these two theories of teaching? In particular, are there contrasting or conflicting underlying values and beliefs?

In a similar way, the teacher would have to consider possible interpretations for the high and low correlations between the various pairs of constructs. By considering possible implications and interpretations the teacher is undertaking a form of self-criticism and analysis, which is in agreement with the model of the teacher as the critically reflective practitioner as proposed by Schon (1983).

By considering possible interpretations of the full range of high and low correlations for both elements and constructs, teachers gain insights into the ways they are thinking about their professional practice. In particular, they develop an understanding of their knowledge claims or theories of teaching and the assumptions, beliefs and values which underpin them. Thus a touchstone approach to theory development can be used to develop both a theoretical and procedural basis for the interpretation and analysis of teachers' theories of teaching.

Progress in Theory Development

The touchstone between competing theories is that set of theoretical claims, principles, processes, methodologies, values and beliefs which underpins each of the competing theories. This touchstone is a new theory, and it is in itself a proposal for the solution of the original problem being considered. The essential question is whether this new theory is better than all, or any, of the previous theories. Has there been progress in theory development as a result of applying the touchstone approach?

In the first instance, the touchstone involves theoretical claims, methodologies, processes and principles. These involve claims of both propositional and procedural knowledge, that is, of knowing that and of knowning how. Progress in theory development is indicated by *increasing consistency*. The new theory is a better theory than those from which it was derived because the theoretical claims, processes and methodologies it incorporates are more consistent than those within the original theories.

In a similar way, the examination and interpretaiton of the underlying values and beliefs identified in the touchstone would be directed towards increasing the agreement between them. Theory progress is indicated by the increasing coherency of the underlying beliefs and values in the touchstone.

All educological theories are, or imply, recommendations for practice. Thus whilst a theory newly developed using the touchstone approach may be both more consistent and coherent, theory progress may not have been made if this new theory cannot be practially applied, or at least be perceived to be practically applicable. The new theory must be practically plausible.

For the touchstone approach to theory development, three factors which indicate progress in theory development are consistency, coherence and practical plausibility, although these are not the only indicators. The touchstone approach to theory development, and the corresponding use of repertory grids for interpretation and critical reflection, provide a basis for developing new theories and for identifying and evaluating progress towards more consistent, coherent and practically plausible educological theories.

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The Journal

The *International Journal of Educology* is a refereed journal (ISSN 0818-0563) which is published biannually (January and July) by Educology Research Associates. The *Journal* publishes works which examine the various features or aspects of the educational process (e.g. teaching, guided studying, learning process, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counselling) from an educological perspective. The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The term 'educology' means knowledge about the educational process and it derives from the terms 'education' and '-logy'. The term has been in use since the seminal work in educology by Professor Lowry W. Harding at Ohio State University in the 1950s and by Professors Elizabeth Steiner [Maccia] and George Maccia at Indiana University in the 1960s. The discipline requisite for producing educology includes that which is necessary for conducting analytic, normative (or evaluative), empirical (experimental and non-experimental) inquiry or research. The educological perspective is inclusive of the scientific, praxiological, historical and philosophical perspectives in discourse about the educational process. Rational, constructive action within the educational process derives from sound educological understanding. Through studying educology, one can develop educological understanding towards several ends, e.g. towards heightened sensitivity for educational situations, effective participation within educational situations, the articulation of sound theory about educational situations and resolution of problems connected with educational situations.

Advice to Contributors

The editors invite submission of manuscripts from contributors for publication. The *Journal* publishes works which focus upon the educational process (or aspects of the process, such as educational goals, educational policies, teaching processes, cognitive development, curriculum, counselling, educational management and leadership) and which use a variety of appropriate approaches to research and inquiry, including the following: normative, analytic and empirical, experimental and non-experimental, historical and philosophical, jurisprudential, interpretive, critical and evaluative, scientific, praxiological and technological.

Manuscripts are reviewed anonymously, and those which are accepted are normally published in the next issue of the *Journal*. Contributors will be sent a complimentary copy of the issues in which their articles are

published Contributers seeking publication of manuscripts should submit an abstract (100-200 words) and four copies of the manuscript If the manuscript is available on a 3 and one half inch disc for Apple MacIntosh (Macwrite) please send a copy of the disc as well Manuscripts should be typed with double vertical spacing on one side of A4 sized (210 x 297 mm or 8 and one half x 11 inch) paper with uniform margins (3 cm or 1 inch both sides top and bottom) To ensure anonymity in the reviewing process the author's name should appear only on a separate title page The subsequent pages should be numbered consecutively and only the title (not the author's name) should appear on the first page The length of manuscript should range between 5,000 to 15,000 words The bibliography should be arranged in this form Author (date) Title Place Publisher Referencing in the text should be in this form (Author date pages) Footnotes of explanatory text should be placed at the end of the text but before the bibliography Diagrams and charts should be camera ready for printing on offset

Manuscripts will be viewed with favour if they (1) examine the educational process (or some aspect of the process) from an educological perspective and (2) use appropriate rules of evidence to advance sound arguments in support of warranted conclusions The educological perspective in discourse treats the educational process as the central concern (i.e as the dependent variable) of the problem being addressed in the discourse The disciplines requisite for forming educology include the rules of evidence which are necessary for conducting analytic empirical and normative research (or inquiry) and for warranting analytic, empirical and normative assertions The educological perspective encompasses historical, jurisprudential, analytic philosophical, normative philosophical, scientific, praxiological and political praxiological discourse about the educational process

For authors seeking further guidance as to what constitutes educology and the educological perspective two helpful introductions to educology are available in *Perspectives on Education as Educology* (edited by J.E. Christensen, Washington, D.C University Press of America 1981) and in "Education, Educology and Educological Discourse Theory and Structure for Education and Constructive Action in Education" (J.E Christensen *International Journal of Educology* 1 1 (1987) 1-32)

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Editorial

A Challenge for Educologists of Curriculum

Introduction

Educology is the fund of knowledge about education Those who contribute to the fund are educologists and those who provide guidance in learning the fund are teachers of educology (Educators are teachers of any fund of knowledge including the fund which constitutes educology)

One of the problems which educologists and teachers of educology perennially address is What purposes are appropriate for schools?' and one common and quite familiar justificatory argument for school curricula is that the funds of knowledge which are offered in schools should be studied because they enhance employment prospects

School Curriculum for Employment

Suppose that you do accept this position and offer it as justification for the goals which you specifiy for your curriculum The full extension of the employment argument goes something like this The set of goals which you specify for the school curriculum are worthwhile to pursue because attainment of them enhances the employability of the students in their adult lives (This step in the argument is one of value verification (cf Paul Taylor *Normative Discourse* 1961) The curriculum is justified in terms of a wider value that of employability)

By implication employment is desirable and it is reasonable to ask why is it desirable You might argue that employment is good because it contributes to production of all the goods and services which we collectively require as a society, that everyone should seek employment to carry their fair share of the workload and that it is necessary for earning an income to buy both the necessities and the luxuries of life (This is the step of value validation (cf Taylor) in the argument The value of employment is justified in terms of a wider set of values viz production, fairness income consumption)

By implication this wider set of values is desirable How might this set be justified? You might argue that it is through holding this set of values that one can attain happiness and that happiness through material well being is an ultimate value a way of life which is superior to alternative ways of living (This is the step of value vindication (cf Taylor 1961) Justification of the set of values -- production fairness income consumption -- in terms of a way of life -- happiness through material well being) This then is one example of a justificatory argument for curriculum (and it also is an example of how to produce normative educology from normative inquiry i e from justificatory argumentation)

From the argument for the desirability of employment derives the rule to judge any curriculum worthwhile in relation to the degree to which it ultimately contributes to a person s happiness through material well being

School Curriculum for Rational Self Interest

Of course no argument goes without its detractors Our world is one of competing sets of values and ways of living One can argue forcefully that while employment is in some ways desirable it must be kept in proportion to other worthwhile things in human existence Work should not be the only thing in life In fact employment is more a necessary evil than an unmitigated good Employment after all is labour for wage a serving of someone else s interests rather than pursuing your own genuine authentically chosen interests The good life is the one in which you are at liberty to pursue and develop your own interests in accordance with authentic choices from well known criterially evaluated and readily available alternatives

Suppose that you accept this position and offer it as justification for your curriculum How might your argument proceed? The first step is value verification identification of the primary value Your curriculum may have value for enhancing employability but that is a secondary or lesser value The curriculum has primary value for enabling students to identify and pursue their own self interests

The next step in the argument is value vindication justification of the wider value of self interest in terms of a set of higher values You might do this by first arguing against employment then arguing for self interest

An Argument Against Employment You might argue against employment on the grounds of wastefulness and self destructiveness That is in a highly industrialised and automated economic system not everyone can be employed nor need they be employed Automation and robotics reduce the need for human labour and to seek to atain full employment is wasteful Moreover it is ultimately self destructive if the condition of full employment is to be achieved by unending economic expansion A modern production system is too efficient to permit it to produce as much as possible It depletes nonrenewable resources and pollutes the renewable ones It produces far more than a society should reasonably consume When consumption becomes valued as the primary (indeed only) means of achieving the good life the combination of efficient production and unbridled consumption results in waste of colossal proportions ultimately resulting in destruction of environment of fellow human beings and finally of self Certainly no one should predicate self esteem and personal happiness upon how much one irrationally produces unreasonably earns or mindlessly consumes and squanders

A far more desirable alternative is rational production It should be governed by two factors the capacity of resources to renew themselves and the demands of rational consumption Such consumption is frugal moderate confined to reasonable needs averse to excess

An efficient highly automated economic system reduces the time required of us to be engaged in production and distribution It gives us time on our hands A worthwhile use of that time is the development of self interests not the interests chosen for us by others and the self interests should be higher ones, not base ones

The highest self interest is to develop those qualities which enable us to live in ways which are befitting of human beings What are those ways? An inkling of what constitutes those ways can be gained from an example which paradoxically appears to be nonhuman In the old television series "Lassie" the dog was presented to the audience as not almost but entirely human in function She consistently exhibited mindfulness purposefulness reasonableness (including charitability generosity kindness courageousness) and the ability to conceive meaning with symbols (use language) The Lassie of that series although in a nonhumanoid biological form, exemplified to a large extent what is entailed in leading a life which is befitting of human beings having cognition and acting reasonably in relation to that cognition To inquire, to learn, to reason and to live one's life in relation to those three processes form the basis of treating one s self in ways which are befitting of a human being

(At this point in your argument, you have completed the process of value validation ie, you have justified your rejection of employment and your appeal for the pursuit of self interests in terms of a higher set of values -- learning, inquiring, reasoning and rational action Next comes value vindication, justification of the higher set of values by appealing to a way of life)

If inquiring, learning, reasoning and taking rational action are worthwhile, then why? What justification can be offered for them? You might argue, at this point that these are means to happiness, and happiness through rational action is an ultimate value, a way of life which is superior to alternative ways of living In this way of life the primary values are open and free inquiry, sound evidential and criterial argumentation, resolution of conflict through reasonable and rational discourse, mindful and authentic action based upon reflection and intelligent inquiry, a due regard for the interests of self and the rights of others and a disposition to inquire in order to know what truths can be known and to use those truths for personal and collective benefit

This way of life prizes frugality in consumption and abhors waste It begrudges time required for human labour in production and distribution. It tolerates wage for labour or fee for service as a necessary evil, a sacrifice of part of one's time away from rational self interest because a machine can not do the job required for the material well being of the society Employment is time taken away form time better spent at pursuing one's interests as a human being

In terms of this way of life -- a way of life which predicates happiness through rational action -- any curriculum is judged worthwhile to the extent that it enhances a students's willingness and ability to

(1) inquire systematically and carefully,
(2) respect evidential and criterial arguments,
(3) use appropriate means to collect necessary and sufficient evidence for
    (a) resolution of problems and
    (b) formulation of constructive, reasonable actions in relation to authentically chosen intentions and purposes;
(4) pursue one's worthwhile goals with
    (a) intelligence and responsibility,
    (b) a sense of self determination and
    (c) due regard for the concerns and rights of others as well as for self

A Challenge for Educologists of Curriculum

To form a sound argument for your curriculum, you must develop it in terms of value verification, value validation and value vindication, culminatng in a rational choice of a way of life to which you are authentically and rationally committed Developing a sound justificatory argument goes far beyond quoting government documents, laws or regulations It requires, ultimately, that you identify and explicate the way of life which you can authentically and genuinely recommend on the basis of rational choice This requires that you personally engage in the reasoning process and not rely upon what someone else or some document tells you to value In these matters, your own reason must be your guide

The challenge which we invite you to accept is to contemplate the consequences of embracing a way of life predicated upon happiness through rational action (vs happiness through material well being) We ask you to consider the implications of a curriculum for freedom (vs a curriculum for production and consumption) What funds of knowledge and ranges of knowing might the curriculum promote? What learning experiences would be appropriate? What goal structures would suit? We invite you to engage in inquiry with us to form plausible and warranted solutions to these questions

Editors

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An Educology of Social Structure and Literacy

Jnanabrata Bhattacharyya
Southern Illinois University
Carbondale, Illinois, USA

ABSTRACT

Popular literacy is impeded by a variety of social structural factors such as poverty and child labour, social jealousy of popular education, the discourse of formal instruction and the relatively low level of national resource allocated to primary education. It would also appear that literacy expansion takes place as part of an overall enhancement of quality of life. An educological model such as the one proposed by Quisenberry and Matthias (1989) which emphasizes individual motivation to the neglect of these factors is likely to be inadequate for the explanation of the process of how literacy is developed and for effective action in promoting literacy.

I. Introduction

In a recent article, Quisenberry and Matthias (1989) have proposed an educological model for literacy in the Third World. High rates of illiteracy prevail in the Third World, they suggest, because of three major reasons. First, in the Third World, there is no print-oriented culture. That is, literacy is not functional, and therefore the illiterates lack the requisite motivation to be literate. Second, print is scarce, thus children cannot be immersed in print, and such immersion is necessary for literacy. Third, school texts are inappropriate. They are not in the children's mother tongue, and their contents are unfamiliar to the children. Of these three factors, the pivotal one, clearly is the nonfunctionality of literacy, that is, people can conduct their everyday life without being literate. Literacy for them is not a felt need. In the elegant observation of the authors "Print serves the rituals of the school, but not the rituals of the family, the village or the community."

Given this analysis of the crucial absence of the relevance of literacy, the solution follows. Make literacy needed by encouraging a wider use of print

> for transmission and documentation of important news items, for shop and street signs and for other basic intracommunity communication. In other words, print as a source of information and enjoyment needs to become a more active variable in the literacy education in the targeted region.

And chap books written in mother tongues with their contents drawn from local familiar sources will take care of the problem of appropriate text (and being inexpensive of the problem of cost as well)

We thus get an educological model of motivation and immersion The motivation is to be induced from above by making print a part of everyday life and the inducement is to be buttressed by a greater availability of and access to print

At first blush the model is attractive enough It is simple and inexpensive and therefore implementable Moreover the production of reading material in mother tongues not only satisfies the question of relevance but also resonates to the wider issue of cultural autonomy and democratic plurality But there are serious problems with their model as there are with the motivational-developmental model generally of which this model is a variant Here I will confine myself to reiterating the importance of the relationship between social structure and literacy. and like Quisenberry and Matthias with particular reference to South Asia

II. Print and Literacy

By formulating the problem of literacy as a function of motivation and immersion Quisenberry and Matthias extrude it out of its social matrix and thereby reinforce the conventional but erroneous notion that literacy is purely a technical problem and a matter only for individual action One can hardly argue against a wider distribution of printed material But would that induce the needed motivation and make literacy relevant? Does not this model overly simplify -- and thereby raise a vain hope about -- what is a far more complicated problem? If immersion were a factor of literacy one is utterly at a loss to explain the high incidence of illiteracy in for example the USA -- some 60 millions in 1985 according to one estimate (Kozoll 1985) where opportunities for immersion cannot be said to be inadequate Or how would one accommodate to this model the widespread illiteracy in the great urban centres of the Third World where print is relatively abundant (including street and shop signs and material for intra-community communications the items suggested by Quisenberry and Matthias)? And in the rural areas of the Third World while print is indeed relatively scant it is today far from invisible In the last decade the number of rural libraries has increased as has the rural circulation of newspapers and periodicals Add to this the unmeasured (though perhaps measurable) quantity of ephemera -- almanacs. commercial advertisements political campaign and family planning literature Finally there has been an expansion in the number of rural schools The point is that in most Third World countries today in urban as well as rural areas print is around But being around and being accessible are different things Illiteracy and print can and do coexist

On the other hand why is it that for some literacy has been possible even before printing was invented or without print and for many others impossible even with it? Historically and confining ourselves to Europe books as we ordinarily conceive of them (made of paper and printed with movable types) could not have existed before the mid-1400s Although paper invented in China was available in Europe in the 12th century movable type probably also invented in China was not until the mid-1400s

Paris saw its first printed book in 1470. By the end of the 16th century, with a population of about 100 million Europe had produced probably no more than 200 million copies of books (Febvre and Martin, 1976). That works out to an average of two copies per head, not the number one would imagine necessary for immersion. "Books were a luxury" (Braudel, 1981). But despite this dearness of print, the number of students even at the university level had increased "considerably" since the 12th century (Braudel, 1981), three centuries prior to the coming of the book. I do not wish to belabour the point, but the significance of immersion can not have been great. On the other hand, the history of literacy reveals a pattern of its appropriation by some social classes to the exclusion of others, and the exclusion has operated along two axes, economic and cultural.

III. Economy and Literacy

The most glaring fact about illiteracy is that it accompanies poverty. The great bulk of the illiterates is concentrated amongst the poorest deciles in any population. One reason for this is the prevalence of child labour, especially in the rural, agrarian sector (Acharya, 1985; Weber, 1976; Jansen, 1986). This alone probably accounts for the majority of the children who do not participate in school, participate inadequately or drop out. Children baby-sit, collect fuel (wood, dung, crop residue), fetch water, cook and tend doemestic animals. They ply ferry boats, work as farm labourers, porters, fruit sellers, shoe shiners, domestic servants, beggars and prostitutes, and in numerous other occupations in the informal sector. For the parents, the economic value of the children's labour is important enough to make the opportunity cost of their schooling forbidding (Sen and Grown, 1987). This accounts for much of the parents' antipathy to schools. Literacy expansion amongst the underclasses also faces hostility from the employers of child labour, such as landholders, shop keepers and petty traders, and for much the same reasons (Acharya, 1985).

There is too a general social opposition to underclass literacy. "No villein should be suffered to send his sons to school" was the petition to the English Commons in 1391 (Coulton, 1925:254), and the sentiment lasted in Western Europe well into the second decade of this century. It continues to date in many Third World countries, although perhaps in more adroit forms. It may manifest itself as derision. Teachers who either belong to or identify with the relatively upper classes may disparage the children's speech, family, class, caste and generally denigrate them for being in school. In the patron-client relationship which structures much of the social reality in the Third World, uppish behaviour by underclass clients (or their children) may have grave consequences. The clients may be cut off from the patron's protection, from loans, from land and employment (Jansen, 1986; Lemarchand, 1972; Bhattacharyya, 1979; Scott, 1972).

This jealousy may go a long way in explaining the low level of public expenditure on primary education in South Asia with the sole exception of Sri Landa (see Table 3 below). Thus while the benefits of popular literacy have been acclaimed (occupational mobility, economic and technological development, political efficacy, eradication of undesirable social practices, etc. UNESCO, 1947, 1949, cited in Levine, 1986), the budgetary allocation in most Third World countries for education as a whole has been low and a disproportionate part of it has been devoted to secondary and tertiary education inaccessible to the underclasses In South Asia towards the end of the 1950s government outlay for education as a percentage of national income was 1.2 in Pakistan and 1.7 in India In both cases more than 15 percent of it went to non-elementary education (UNESCO 1962) In most South Asian countries between the mid-1970s and mid-1980s public expenditure on education as a percentage of total governmental expenditure declined and as a percentage of GNP increased marginally (Table 1)

Table 1

Public Expenditure on Education:
Total and as Percentage of GNP and of All Public Expenditure

		Total Education Expenditure	
Country	Year	As % of GNP	As % of Total Govt. Expenditures
Bangladesh	1975	1.10	13.60
	1980	1.50	8.20
	1982	1.50	...
	1983	1.80	8.60
	1984	1.80	...
	1985	1.90	...
	1986	2.10	10.50
India	1975	2.80	8.60
	1980	3.00	10.00
	1982	3.20	...
	1983	3.40	9.20
	1984	3.70	9.00
	1985	3.70	9.40
Pakistan	1975	2.20	5.20
	1980	1.80	5.00
	1982	1.90	4.90
	1983	1.90	5.00
	1984	2.00	...
	1985	2.10	...
Sri Lanka	1975	2.80	10.10
	1980	3.10	8.80
	1983	3.00	7.10
	1984	2.80	8.50
	1985	3.10	...

Source:UNESCO, Statistical Yearbook, 1988. Paris: UNESCO, 1988. Table 4.1.

In three countries in South Asia -- Bangladesh Nepal Pakistan -- the percentage of public current expenditure on education allocated to pre-secondary level education declined during the same period (mid-1970 to mid-1980). In one case (Bangladesh) expenditure dropped from 57% in 1975 to 39.1% in 1986 (Table 2).

Table 2

Public Current Expenditure on Education
Distribution by level of Education

Country Currancy	Year	Pre-primary and 1st Level	2nd Level	3rd Level
Bangladesh	1975	57.00	16.50	17.40
	1980	45.30	29.20	23.00
	1984	46.20	30.10	19.10
	1985	51.00	37.10	10.10
	1986	39.10	48.20	9.80
India	1975	40.00	26.60	12.10
	1980	36.90	24.20	13.50
	1984	45.00	30.70	19.00
	1985	44.60	30.30	18.70
Nepal	1975	48.80	...	40.70
	1980	58.80	...	35.00
	1985	35.70	19.90	33.40
Pakistan	1975	41.10	30.30	17.20
	1985	40.20	26.00	24.40
Sri Lanka	1975	84.50		6.50
	1978	86.10		8.70

Source: UNESCO, Statistical Yearbook, 1988.Paris: UNESCO, 1988. Table 4.3

Thus the education budget is meagre and its share distributed to pre-secondary level education is disproportionately more so disproportionate in relation to the size and distribution of the illiterate population Even this is heavily skewed in favour of the urban male population The rural population especially female accounting for the majority of the illiterates is yet to receive the attention that its numerical imporance should warrant (Table 3)

Table 3

Illiterate Population 15 Years of Age and Over

Country	Year of Census or Survey	Population	Age Group	Illiterate Population Percentages Total	Male	Female
Bangladesh	1974	Total Population	15+	74.20	62.70	86.80
		Urban		51.90	42.10	66.80
		Rural		76.50	65.30	88.50
	1981	Total Population	15+	70.80	60.30	82.00
		Urban		51.80	42.00	65.90
		Rural		74.50	64.50	84.70

Country	Year of Census or Survey	Population	Age Group	Illiterate Population Percentages Total	Male	Female
India	1971	Total Population	15+	65.9	52.3	80.6
		Urban		39.6	27.6	54.5
		Rural		72.9	59.4	82
	1981	Total Population	15+	59.2	45.2	74.3
		Urban		34.9	23.6	28.1
		Rural		67.3	52.7	82.4

Country	Year of Census or Survey	Population	Age Group	Illiterate Population Percentages Total	Male	Female
Nepal	1971	Total Population	15+	87.5	77.6	97.4
		Urban	10+	53.1	37.6	72
		Rural	10+	87.1	77.1	97.3
	1981	Total Population	15+	79.4	68.3	90.8
		Urban		52.6	40.3	67
		Rural		81.3	70.4	92.4

Country	Year of Census or Survey	Population	Age Group	Illiterate Population Percentages Total	Male	Female
Pakistan	1977	Total Population	15+	76	64.9	87.9
		Urban		54.6	42.8	68.1
		Rural		84.6	74.1	95.5
	1981	Total Population	15+	73.8	64	84.8
		Urban		53.1	43.1	65.3
		Rural		82.6	73.4	92.7

Source: UNESCO, Statistical Yearbook, 1988. Paris: UNESCO, 1988. Table 1.3.

Thus, popular literacy is impeded by poverty, especially the practice of child labour, jealousy, especially the low level of public expenditure on primary education. And these go hand in hand with certain specifically cultural impediments.

IV. Culture and Literacy

The cultural obstacles to literacy can be conveniently divided into two sets -- those exogenous to the illiterate strata and those which are endogenous. Such a division, be it noted, is more anlaytical than real, and it should not be drawn sharply. In real life the exogenous and the endogenous interpenetrate and reinforce each other, eventuating in mass illiteracy. By *exogenous factors* I refer to the various exclusionary principles and practices which forbid, restrict or inhibit popular literacy. I have already alluded to class jealousy of popular literacy, which is explicitly rooted in economic structure. Here I wish to discuss those factors which have less than explicit connection with economic structure and which, at any rate seemingly arise from different terrains.

In much of the Third World (as in much of the First World as well), there is operant a cultural model in which literacy is an entitlement of the upper strata. As Quisenbery and Matthias have noted, literacy does not figure as a requisite in the life of the lower strata. To many peoples distinguished by class, caste, race or ethnicity, in different periods of history, literacy has been restricted if not outright forbidden by virtue of this model (Acharya, 1989, Anderson, 1983; Freire and Macedo, 1987, Graff, 1987, Levine, 1987). One reason for this restriction lies in the original impetus for literacy, namely to train functionaries of god, state and commerce -- relatively high offices, linked to privilege, power and wealth (Graff, 1987:16).

It should be remembered that literacy originated in societies already hierarchical and with a complex division of labour such as the Sumerian civilization where the word-syllabic system of writing first emerged (3100 BC) or the early Babylonian or Egyptian or Indic (Gelb, 1963, Graff, 1987). From the beginning it was harnessed to the needs of sacral and political control, and was thus the privilege of the elite. The mystique of reading, and especially writing, and its alliance with privilege, weakened in the subsequent centuries down to the present but never totally dissipated. The new entrants to literacy from social ranks below the gentry upheld the mystique and the unequal social status.

There are exceptions to this generalisation. It is true, for example, that in Rome both before and during the imperium it was often the slaves who were educated, and they taught the privileged youth (Graff, 1987). But that is an oddity rather than the rule in the history of literacy.

The mystique and the privilege of literacy were reinforced by its medium -- not just the language, which was almost always alien, but the whole discourse in which it was imparted and which it elicited, upheld and enforced. In much of the world, literacy meant learning the language of privilege, whether it was Classical Sanskrit, Augustan or Ciceronian Latin or Classical Greek, Persian or Arabic, languages which had perhaps as much to do with everyday life as they do today, that is to say, very little.

One would think that this impediment of a distant, awesome language would dissolve with the widespread use of the vernacular for instruction (in Europe since the 10th and 11th centuries -- Graff, 1987) which was to culminate in the 19th century in the tumult of linguistic nationalism (Seton-Watson 1977). But the "vernaculars" were often just as remote and unfamiliar as the classical languages which they came to accompany or replace.

English, French, German, Spanish, Bengali, Thai, etc -- were not vernaculars or mother tongues, but rather regionally dominant languages which in their turn held sway over numerous submerged mother tongues. Recognition of a vernacular as the language of literacy is a political act (Seton-Watson, 1977). Thus, to name a few, Czech, Hungarian, Rumanian, Bulgarian, Finnish, Norwegian or Ukrainian remained submerged well into the 19th century, not thought fit for instruction, as still remain, for instance, Cornish, Welsh, Limoge or Oc. The languages which became recognised for "vernacular" instruction, e.g. English, French or German, were inaccessible as Latin or Church Slavonic to the speakers of Cymry or Oc or Czech.

The problem of access does not necessarily go away with the introduction of a more intimate vernacular, e.g. Czech as opposed to German. Even the more intimate vernaculars encompass a number of distinguishable "dialects," one of which becomes the basis of standardization and is recognised as the "proper" language. This allocation of privileged status to one of several possible "dialects" necessarily distances those who belong to the other dialects. But while such privileged status of a dialect is perhaps unavoidable, the choice of the particular dialect to be so privileged is of course political, reflecting in the final analysis the distribution of economic, cultural and political powers. Thus so-called vernaculars are not always vernaculars, and they may remain distant from mother tongues, which arguably are the ideal media for instruction.

The effect on literacy of this perhaps unavoidable distance of the official, proper vernacular to the submerged mother tongues is often aggravated by the manner in which the vernacular is standardized. In the evolution of a language, certain changes occur which have a naturalness to them. They are changes which are not brought about by a self-conscious language policy, as for instance the passage of Anglo-Saxon to Early English or Old Bengali to Middle Bengali. These natural changes are spread over long spans of time, often centuries. They are brought about pragmatically in the course of interaction with other languages, for example English with French, Czech with German, Hindi with Persian.

A self-conscious language policy, which has been an integral feature of nationalism since the 19th century, is an altogether different matter (Anderson, 1983). Under the impetus of such a policy, standardization has often meant wholesale borrowing from a prestige but alien language and the simultaneous devaluation of the vernacular stock. The distance of the privileged dialect was magnified by the standardization. The newly standardized language became in many instances the putative vernacular for the medium of instruction within schools but it remained an alien language and often a rather artificial one

It was by this process that instruction in the vernacular was paradoxically not always in the mother tongue We are accustomed to thinking that the medium of instruction refers only to the language of instruction But it should be conceptualised to include the whole discourse within which and through which instruction is envisaged -- the social class of the teachers, the physical setting, the decor, the etiquette, the spoken and unspoken disciplinary codes, etc Analogous to the language of instruction, these too can be familiar or alien to, continuous or discontinuous with, the origins and home environments of the pupils

Levine (1983) notes a revealing instance from the early days of mass education in England of the instructional relevance of this discourse There were two types if schools for the working class children One was more institutionalised, more "respectable" It offered "literacy embedded in syllabuses and regimes intended to inculcate piety, discipline and obedience, as these virtues were perceived by the predominantly middleclass sponsors and organisers" These school were free The second type of school was informal It embraced the "subterranean traditions of autonomy, community solidarity and political dissent" It offered greater continuity with the "oral traditions and culture of the labouring stratum, and their fuller incorporation within, and control by, working-class communities" The latter were fee-charging They were "private venture schools, the corresponding societies, the ale and coffee house reading rooms, self-help and casual instruction from parents and friends"

In the first type of school,

> Teachers were self-consciously above and outside the community they purportedly served and were often viewed, like charity workers as agents of oppressive authority.

By contrast, the informal schools were run by untrained teachers

> indifferent to pupils' irregular attendance and unkempt appearance. If they did not attempt to impose an elaborate disciplinary or moral regime, this was probably preferred by those parents anxious to purchase basic skills for their children rather than socialisation into the values of their social superiors. It is likely, for the same reasons, that informal teaching and self-help flourished.... [Levine, 1986]

Paulo Freire (1987) and Henry Giroux (1983) of course have long been arguing along similar lines The formal schools and almost everything about them -- the syllabuses, the language, the teachers, the discipline -- represent a socially superior culture to which the lower class pupils do not belong but which they must respect and emulate Their own culture --- speech, idioms, manners, values -- the school makes it clear, is unacceptable and to be forsaken In this fashion, the schools represent a permanent cultural aggression against them To participate in the school's processes is to surrender to the aggression Not to participate or to drop out, thus, may be prompted by self-respecting resistance rather than stupidity and recalcitrance

Conclusion

Wittingly or unwittingly the motivation/immersion model for literacy misallocates the blame for mass illiteracy and advocates a policy which is unlikely to deliver the desired results. Leaving aside the problems of insufficient budgetary allocation for education and the assorted social and cultural factors discussed above, the widespread practice of child labour alone makes the motivation/immersion model irrelevant.

It would be more helpful if the recommendations had emerged from an examination of the experience of those Third World countries of comparable economic development level which have greatly reduced illiteracy, such as China, Sri Lanka or Thailand. In 1985 adult (meaning 15 years of age and older) illiteracy in China was 30.7 percent, 12.9 percent in Sri Lanka and 9 percent in Thailand. This compares with 66.9 percent in Bangladesh, 56.55 percent in India, 74.4 percent in Nepal and 70.4 percent in Pakistan.

How did China, Sri Lanka or Thailand achieve what other comparable countries in Asia have not? One element of the answer may be the greater level of public expenditure for education sustained over a long period of time. Another is perhaps that the greater public expenditure for education is part of general policy to improve the physical quality of life by reducing hunger, disease and mortality. That is, in the less developed countries where illiteracy has declined, it has done so in conjunction with an overall enhancement of life. It has not been achieved in isolation. For a brief comparison in these matters amongst China, Sri Lanka and India, see Sen, A., 1989) In other words, no quantity of chap books, street signs and other printed materials for intravillage communication is likely to make print serve the rituals of home and community, unless these are buttressed by a broader range of public policy which encompasses other sectors of life.

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Education in Thailand: An Educological Model for Developing Countries

Michael T. Miller
University of Nebraska
Lincoln, Nebraska, USA
and
Arthur L. Casebeer
Southern Illinois University
Carbondale, Illinois, USA

ABSTRACT

Over the past three decades, the Kingdom of Thailand has experienced not only an economic revolution which has placed it on the verge of the industrialised world, but has also set the pace for educational innovation for developing countries. This innovation can be illustrated through a variety of mechanisms, but it is crystallised by studying the literacy rate in Thailand. As the Kingdom approaches the 21st century with almost a 90% literacy rate, Thailand has become second only to Japan in terms of literacy for all Asian countries.

While some of this success is related to the government's continued commitment to education, credit also needs to be directed at the social values of the Thai people. This strong moral and social structure, exemplified by the high regard held for the present King Bhumidol Adulyadej, is interwoven with the belief in and practice of Hinayana Buddhism by 95% of the Thai population. This religion has also done its share of encouraging literacy by combining the image of the "Teacher" into its doctrine for the past 2000 years.

Despite these simplistic statements which attempt to overview Thailand and preface a more detailed discussion of the success of Thai education, it is clear that the Kingdom of Thailand is in a unique position among developing countries, and it has taken advantage of its resources as evidenced by the gas and oil fields in the gulf area. The steps taken by Thailand provide a model for similar countries to approach the problems of illiteracy and formal schooling.

Thailand: The Country

Thailand currently has a population of some 52 million, with 6 million residing in the country's capital, Bangkok. Thailand is bordered by Burma in the west Laos and Cambodia in the north and east and Malaysia in the south As a constitutional monarchy Thailand is the only country in southeast Asia which maintained it independence during the colonial period when western powers dominated the region This constitutional monarchy concept has allowed Thailand to survive as a capitalistic country and it has fostered a multi-pary political system which exists in harmony with the King (*Thailand in the 1980's* 1984)

Today, the Thai economy remains independent through a heavy mix of foreign investors and it utilises natural and raw resources to lure economic development projects Throughout the 1980's, the Thai economy was made up of a combination of agriculture industry, forestry and most recently, tourism. Rice, rubber, maize and tapioca products led the list of agricultural export products The production of construction materials garments, chemicals and chemical products and engine assembly have been the primary industrial operations (Foreign News Division, Office of the Prime Minister, 1982). The Thai economy was so successful in 1987 that it led all of Southeast Asia in terms of its gross domestic product (GDP) which was 32.9 billion U.S. dollars As such, Bangkok and the rest of Thailand have become competitors with Hong Kong and Singapore for economic supremacy in the area

For the rest of Southeast Asia, Malaysia had a GDP of 25.37 billion U.S dollars, and it claimed a 75% literacy rate Vietnam, with a 16% literacy rate among adults, had a GDP of 9 billion U.S dollars Burma claimed a 34% literacy rate and a GDP of 5.7 billion U.S dollars Thailand's other neighbours, Laos and Cambodia, have both claimed literacy rates of approximately 45% and GDP's of 600 million and 650 million respectively

First unified under the rule of King Rama I, the history of Thailand is filled with confrontations with neighbouring countries At one point, in these conflicts, the city of Ayuthya, Thailand's second capital, was devastated While King Rama II through V were all advocates of more open trade, Rama VI, an Oxford graduate, was one of the most progressive leaders in terms of developing education Although his most noted accomplishement was the gaining of admittance for Thailand to the League of Nations after World War I, his reign was also witness to the creation of Thailand's first university at Chulalongkorn in 1917 (*Highlights of Thailand* 1987)

Also of importance in understanding Thailand's role in Asia is the rich Thai cultural background Under the auspices of the Fine Arts Department the country has preserved a history which has emphasised architecture, scupture and paintings These arts have been primarily reflective of a religious orientation No description of Thai culture would be complete without placing special emphasis on the many lavish Buddhist temples which populate the country Examples of such architecture include the structures of Phra Chedi, Bot and Vihara, Phra Prang, Mondop and Pra Sat (Bhirasri 1988)

Although timber generally forms the base of all temple roofing, most temples are filled with glass mosaic, gold leaves, porcelain, stucco, lacquer and (to a lesser extent) inlaid pearls The techniques used in creating these architectural masterpieces were revived in the 1980's by special order of

Her Majesty the Queen. This directive was developed to create an awareness among the Thai people of the "treasures belonging to the nation" (Bunyasingh, 1987)

Also of special note is the lack of emphasis on unique Thai literature. From a historical perspective, most existing work has focused on religious interpretations, while the historically more diverse and subject-varying original works were destroyed with the capital city, Ayuthya, in 1767. Despite the lack of this humanities base, educational programming has had a great deal of success in expanding the social sciences, and it has come to fruition after only 70 years of implementation (Wyatt, 1984)

Thai Education: Structure and Success

The structure of education in Thailand consists of independent preschools, 6-year primary schools and 6-year secondary schools. The secondary schools divide into lower secondary and upper secondary sections. Admission to higher education is based on national examinations, and work for the bachelor's degree and for lower and post-baccalaureate degrees are available. Many Thai students qualify as disabled or disadvantaged students, and the existing structure provides special education programming for these students. The programs are intended to provide students with an equal opportunity to qualify for entry into Thai state universities

A unique parallel to this structured education is the nonformal educational offerings provided by both the Department of Nonformal Education and over 40 support agencies. Early nonformal education was implemented by Buddhist monks throughout the country until the passing of a formal act of government allocating money and programs for nonformal education in 1940. Today, approximately 80% of the Thai population is involved in out-of-school education programs in rural and poor areas and those parts of the country with few schools. These programs have utilised a great deal of radio programming, television course offerings and correspondence education. With this flexibility, the Department of Nonformal Education has been highly successful in recruiting participation by minority populations

To meet the unique needs of Thai society, teacher education in Thailand has evolved in relation to demands placed on it by traditional schools, nonformal education and special education programs. Originally developed in 1895, elementary teacher certification began with a three-year course designed to teach future teachers the basics of educological theory. As of 1981, there were 36 teachers colleges throughout Thailand. The curriculum in these programs not only stresses essential teaching skills, but also places a great deal of importance on the personality of the future teacher so that they will fit in harmoniously with the Thai culture (Department of Teacher Education, 1980)

Outside of the teachers colleges, there are currently 12 public universities and 21 private colleges approved by the Ministry of University Affairs. These institutions of higher education offer masters degree level work at 10 universities, and doctoral work at 5 universities (NIBID, 1987). A great deal of the structure, philosophy and operational procedures within Thai universities have been adopted through contracts with American universities and from recommendations from American educational consultants. For example, Thai universities have typically adopted student personnel services which are very similar to those used in American universities.

Perhaps the most innovative, unique and also the most overlooked aspect of Thai education is the set of provisions created to facilitate special and welfare education. The Thai government has insisted on the creation of numerous shools and institutes strictly for students with various forms of special needs. For example, by 1987, the government had opened 8 schools solely for deaf children and two schools for blind students. There are also centres and hospitals for the more severely handicapped which offer various levels of education. Twenty-two additional schools have been formed for the socially and culturally handicapped children, i.e. children from slums, hill tribes and other special categories.

Although there are separate programs for special categories of children, inclusion of such children in the programs for the general population of children (a practice which is sometimes called *mainstreaming*, especially in the USA) is still appreciated, and it is utilised selectively. Students in special and welfare education programs are monitored. When it is judged appropriate, the students are placed in schools with non-specialised populations, but which have been especially equipped to accommodate students' disabilities or handicaps.

Vocational education has also been a subject of growing interest both as an actual concentration of study and as an educational option for Thai students. Coordinated by the Department of Vocational Education and the Institute of Technology and Vocational Education, programs are provided which offer up to 8 levels of study. These levels range from basic vocational or semi-skilled programs, to the more intricate vocational teacher training segments which culminate with the award of a degree (NIBID,1987).

Despite what may appear to be a very segmented approach to national education, the Thai government's tight control over the various components has maintained a well coordinated balance of programs. This balance of programs has allowed the literacy rate in this Southeast Asian country to soar. The success in literacy which has been achieved in Thailand suggests that the educational philosophies and practices exemplified in Thailand may have value for other countries with similar characteristics and resources.

What follows here is a set of suggestions for educational program developers to consider when designing actual structures for instruction. In these suggestions, we have excluded curriculum design per se because of the unique needs (such as vocational and basic literacy needs) of each country.

Model Components for Educational Structure Development

1. Cultural Assessment

Every culture is unique It has its own set of mores and standards for living It is inconceivable that any educational program could be adequately developed without reference to the basic or core characteristics of the culture for which the program is intended Part of the success of the Thai educational structure is the strong support and belief in education by Thai Buddhists

2. Centralised Control of Programs

Much like the military in many countries, centralised control of education allows for an objective body or individual to evaluate and adjust segments of the educational programs As Thai success demonstrates, a unified approach to educational programs is an appropriate one For example, in Thailand changes to secondary education are not effected until after the ramifications for universities, teachers colleges and other institutions in higher education have been studied By unifying the final decision making, all components of the educational structure are given consideration

3. Special Populations

In any society, and especially in developing countries, special populations of children exist (e g those with developmental disabilities and economic disadvantages) It is the responsibility of the agencies which coordinate educational services, at some point, to address the unique needs of special categories of children Thailand confronted this issue in the beginning of its structural development It made special allowances in its programs to facilitate the transition of children into and out of the special programs There are many examples in other countries, for instance the USA, in which consideration for special categories of children came at a time considerably after the initial provision of formal education and schools for the general population In developing educational structures, the example of Thailand demonstrates the wisdom of making provision at the very beginning for rural, impoverished and developmentally disabled students

4. Growth Sustaining Mechanisms

Projections in developing countries for educational needs are inevitably estimates Always there are some inaccuracies to be anticipated So any new structure needs to have sufficient flexibility built into it to allow for growth and adjustment This flexibility needs to take into account not merely physical facilities, but also the professional preparation of teachers and administrators The Thai educational leadership had the foresight to coordinate the development of the various sectors of educational services with the development of teachers colleges so as to make provision for a smooth transition during times of growth and change

5. Governmental Support

Sustained stability in government always poses a challenge for developing countries. It is a complete necessity for educational development that the process has the support of the government of the day. Stability assures sustained funding, and it lends credibility and non-monetary resources to the educational structure. The Thai model presents a unique situation in which the love of King has been mixed with the love and support for education.

Conclusions

Thailand is unique as a kingdom and as a leader, not only in Asian countries, but throughout the Third World. As such, the success in education as evidenced by the near 90 percent literacy rate provides many suggestions for the creation and growth of educational structures in similarly developing nations. As such, the history and current status of Thai education can be broken down into various components to develop a model for similar developing countries. Described earlier, the model pieces include cultural assessment, centralised control of education, confrontation of special populations, mechanism development for sustained growth and governmental support.

In providing this model, it can be concluded that Thailand has performed well in tailoring an education program to meet the country's needs. Additionally, such success speaks well for the existing moral values and social climate in Thailand.

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The Territory of Educology

James E. Fisher
Richland County School District One
Columbia, South Carolina, USA

ABSTRACT

This analysis conceives the social process of education as territory which can be pictured, mapped and interpreted in the domain of educology. It follows the distinctions among three aspects of the domain of educology which were made earlier by the Editors of the International Journal of Educology. *The aspects are (1) field of phenomena, (2) fund of knowledge and (3) discipline for inquiry. The analysis treats interests in one aspect, the process of education (the field of phenomena), as territory of educology. It treats this aspect as it is conduced in only two of many social settings -- public school and home settings. Forces and their effects on the territory are not considered in the article. Also, not considered in the article are interest in the other two aspects of the domain of educology, i.e. fund of knowledge and discipline for inquiry.*

Introduction

Educology (a fund of knowledge) ranges over the educational process (a field of phenomena) with discipline (rules and logical operations for inquiry). This idea is critical to the advancement of educology, as pointed out by the Editors of the *International Journal of Educology* in their Editorial, "Three Critical Distincitons for Advancing Educology" (1990, 4:1, vi).

With this idea, the major aspects of the domain of educology begin to clarify themselves as (1) territory (field) represented by (2) knowledge formed with (3) discipline.

But just what does the territory look like? What are the distinguishing characteristics of the territory of educology, i.e. of the educational process?

In the introduction of the *IJE*, the Editors say

> The *Journal* publishes works which examine the various aspects of the educational process (e.g. teaching, guided studying, learning processes, learning outcomes, learning environments, goal structures for learning, educational policies, curriculum, supervision, administration, counselling) from the educological perspectives.

This exemplary definition lets us only vaguely see the territory (field) of the educational process which the fund of knowledge, named *educology*, ranges over by the rules and logical operations of disciplined inquiry.

The description of the educological perspective, which follows the definition, helps but only gives us a small glimpse of the territory. It is as follows.

> The educological perspective leads one to think about education, not in terms of the sociology of education, but in terms of the educology of society; not the psychology of education, but the educology of mental processes; not the economics of education, but the educology of economic arrangements and relationships; not the politics of education, but the educology of political processes; not the anthropology of education, but the educology of cultural processes; not in terms of comparative education, but in terms of comparative educology.

The definition and description are suggestive of the territory of educology, however, what is needed are pictures, maps and interpretations of the territory so that its distinguishing characteristics of regions, areas and features can be seen clearly. This need will be met by considering the educational process in two social settings -- the public school and home.

Maps and Interpretations of the Territory of Educology

The territory of educology is not one of many geographic landscapes, therefore, its regions can not be pictured as coastal or inland, nor its areas as mountainous or flat, nor its features as cold or hot. Rather, the territory of educology is one of many social processes, and its regions, areas and features must be pictured in terms of people and their conduct.

Picture 1: Education in Public School as Territory of Educology

Mr. Jenkins and his 25 eighth grade students (13 year olds) are in a middle school language arts classroom. It is the first day of the second quarter of the school year. Mr. Jenkins is using some of the 50 minue class time to review grades received for the first quarter and to preview the objectives for the second quarter. He has the students seated at their desks, which are arranged in a semi-circle with himself in the centre. He is smiling and openly gesturing with and at the students, while maintaining a business like manner.

He asks each student, after informing them of their grade for the first quarter, what their grade goal is for the second quarter and how they plan to achieve their goal. He marks their responses on an overhead transparency, especially designed for this purpose, which projects the responses onto a screen at the front of the classroom. He also has students write thier goal and how they plan to achieve it on a handout, also especially designed for this purpose.

Some of the students respond seriously and politely with smiles and confident gestures, however, some respond jokingly and impolitely with frowns and defiant gestures. The former respond to Mr Jenkins' questions with self directives about how to achieve the goal they have set for themselves. The latter respond with directives to Mr. Jenkins about how to change the objectives of the course.

Mr. Jenkins, after listening to all student responses, directs those who have set goals for the second quarter to begin reading and doing Objective 1 at their desks so that they can ask questions for comprehesion tomorrow. He directs those who have not set goals to meet around the tables. Eight students grudgingly move to and sit at the tables.

Sitting at the table with the eight students, Mr. Jenkins faces each student and asks them how they want the objectives of the course changed. Some say they want to have fewer objectives to accomplish, to which Mr. Jenkins replies that the number of objectives accomplished successfully determines the grade received. After reviewing this with each of the eight students, they understand, accept and go to their desks and begin working on Objective 1.

At two minutes before the bell, Mr. Jenkins announces that it is time to put their work away, pick up paper and get into their seats and wait for dismissal by the bell. Then the bell rings, Mr. Jenkins smiles and says, "You may pass." All students walk to the door without pushing and shouting and exit into the hallway.

Interpretation of Picture 1:

Does this picture represent the territory of educology, i.e. the process of education? To see if it does, it will be interpreted by a field map of the territory.

Field Map of the Territory of Educology

Education is the social process of

Region I	Who	Feature a	someone and	1
		Feature b	someone else	2
Region II	Why	Feature c	meeting	3
		Feature d	to manage and	4
		Feature e	to teach another or self	5
		Feature f	to study or	6
		Feature g	through study	7
		Feature h	to learn	8
Region III	What	Feature i	to attend or	9
		Feature j	through attention	10
		Feature k	to know and	11
		Feature l	to do	12
		Feature m	something of value	13
		Feature n	judged by some criteria	14
		Feature o	to some degree	15
		Feature p	judged by some criteria	16
Region IV	How	by using Area A, Meeting (1)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20

		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23
		by using Area B, Management (2)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23
		by using Area C, Teaching (3)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23
		by using Area D, Studying (4)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23
		by using Area E, Learning (5)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23
Region V	When	Feature x	for some amount of time	24
Region VI	Where	Feature y	in some situation	25

6 Regions 5 Areas 25 Features

The Field Map shows that the territory of educology has 5 regions. 6 areas and 25 features. It shows that the *How Region* is made up of 6 areas with 7 features (q,r,s,t,u,v and w) distributed among each of the areas.

Interpretations

The following interpretations will be designated with the Arabic numeral referring to the picture, the Roman numeral referring to the region of the picture and the capital letters referring to the areas of the region. They will be made using Regional Maps taken from the Field Map of the territory.

Interpretation 1.I: Regional Map 1

Region I	Who	Feature a	someone and	1
		Feature b	someone else	2

Region I is the *Who Region* of the territory of educology. This region is composed of *Features a* and *b*.

Region I shows that Someone (Feature a) and Someone else (Feature b) are part of the territory of educology.

Do *Region I* and its features show in *Picture 1*? The answer is yes, they are shown as follows.

Feature a	someone	Mr. Jenkins
Feature b	someone else	25 students

Interpretation 1.II: Regional Map 2

Region II	Why	Feature c	meeting	3
		Feature d	to manage and	4
		Feature e	to teach others or self	5
		Feature f	to study or	6
		Feature g	through study	7
		Feature h	to learn	8

Region II is the *Why Region* of the territory of educology. This region is composed of Features c,d,e,f,g and h.

Regions I and *II* show that someone (Feature a) and someone else (Feature b) are meeting (Feature c) to manage (Feature d) and to teach (Feature e) others or self to study (Feature f) or through study (Feature g) to learn (Feature h) are part of the territory.

Does *Region II* and its features show in *Picture 1*? The answer is yes, they are shown as follows.

Feature c	meeting	Meeting (1): all students and the teacher in the classroom Meeting (2): 8 students and the teacher around table
Feature d	for management	Teacher: (1) by setting forth objectives and corresponding grading procedures; (2) by having students participate in setting their own goals in respect to objectives and grading procedures; (3) by arranging separate meeting with some students to solve educational problems Students: (1) by attention to goal setting; (2) by attention to educational problem solving
Feature e	of teaching	Mr. Jenkins (1) informing and (2) asking questions
Feature f	to study or	Students: by (1) reading and (2) doing Objective 1
Feature g	through studying	Students: (1) asking questions about (2) comprehending Objective 1
Feature h	to learn	Students: (1) by meeting (2) by paying attention, management, teaching and studying

Interpretation 1.III: Regional Map 3

Region III	What	Feature i	to attend or	9
		Feature j	through attention	10
		Feature k	to know and	11
		Feature l	to do	12
		Feature m	something of value	13
		Feature n	judged by some criteria	14
		Feature o	to some degree	15
		Feature p	judged by some criteria	16

Region III is the *What Region* of the territory of educology. This region is composed of Features i,j,k,l,m,n,o and p.

Regions I, II, and *III* show that someone (Feature a) and someone else (Feature b) are meeting (Feature c) to manage (Feature d) and to teach (Feature e) others or self to study (Feature f) or through studying (Feature g) to learn (Feature h) to attend (Feature i) or through attention (Feature j) to know (Feature k) and to do (Feature l) something of value (Feature m), as judged by some criteria (Feature n), to some degree (Feature o), as judged by some criteria (Feature p).

Do *Region III* and its features show in *Picture 1*? The answer is yes, they are shown as follows.

Feature i	to attend or	Students are learning to attend by (1) being at the meetings, (2) participating in the management of, teaching in and studying in the classroom
Feature j	through attention	Students are learning through attention by (1) reading and doing Objective 1, (2) asking questions about and comprehension of Objective 1
Feature k	to know and	Students are learning to know (1) that the content of Objective 1 is such and such, (2) that the work involved in Objective 1 is such and so
Feature l	to do	Students are learning to do the work involved in Objective 1
Feature m	something of value as	The something of value the students are learning; to attend to, to pay attention to, to know and to do are (1) the content of Objective 1, (2) the work involved in Objective 1
Feature n	judged by the criteria of	Being literate
Feature o	to the degree of	competence
Feature p	judged by the criteria of	(1) The student's goal; (2) the teacher's standards, (3) the school's requirements

Interpretation 1.IV.A: Regional Map 4a

Region IV	How	by using Area A	Meeting (1)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19

Feature t	verbal language functions	20
Feature u	body language functions	21
Feature v	groupings	22
Feature w	manners	23

Region IV is the *How Region* of the territory of educology. The *How Region* is composed of five areas. *Area A Meeting* is one of the areas. *Area A Meeting* is composed of Features q,r,s,t,u,v and w. Regions I,II and III and Region IV Area A show that someone (Feature a) and someone else (Feature b) meet (Feature c) to manage (Feature d) and to each (Feature e) others or self to study (Feature f) or through study (Feature g) to learn (Feature h) to attend (Feature i) or through attention (Feature j) to know (Feature k) and to do (Feature l) something of value (Feature m), as judged by some criteria (Feature p) and in the meeting approaches (Feature q), methods (Feature r), aids (physical resources) (Feature s), verbal language functions (Feature t), body language functions (Feature u), groupings (Feature v) and manners (Feature w) are used.

Do *Region IV* and its *Area A* features show in *Picture 1*? The answer is yes, they are shown as follows.

Area A Meeting

Feature q	approach	Students: (1) The approach to the meeting by students is mandatory. They are mandated by the laws of the land to be at the meeting of teachers and students in the school. Teacher: (2) The approach to the meeting by the teacher is voluntary. The teacher has voluntarily taken the position of teacher at the school.
Feature r	method	Students: (1) The method of calling the meeting for students is that of legislation by state government. It is the method of pronouncement. Teachers: (2) The method of calling the meeting for the teacher is that of legal contract. The teacher is under contractual employment.
Feature s	aids -- physical resources	Students and teacher: The physical resources for calling the meeting for students and teacher are (1) newspaper (2) radio (3) television (4) letters (5) telephone

Feature t	verbal language functions	Teacher: (1) Questionative (2) Informative (3) Directive (4) Emotive Student: (1) Questionative (2) Informative (3) Directive (4) Emotive
Feature u	body language functions	Teacher: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance Student: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	groupings	Students: (1) Large group (2) Small group (3) Individual
Feature w	manners	Students: (1) Seriously polite (2) Jokingly impolite Teacher: (1) Seriously polite

Interpretation 1.IV.B: Regional Map 4b

Region IV	How	by using Area B	Management (2)
		Feature q	approaches
		Feature r	methods
		Feature s	physical resources
		Feature t	verbal language functions
		Feature u	body language functions
		Feature v	groupings
		Feature w	manners

Region IV is the *How Region* of the territory of educology. The *How Region* is composed of five areas. *Area B Management* is one of the areas. *Area B Management*, as *Area A Meeting*, is composed of Features q,r,s,t,u,v and w.

Regions I, II and *III* and *Region IV, Areas A* and *B*, show that someone (a) and someone else (b) meet (c) to manage (d) and to teach (e) others or self to study (f) or through study (g) to learn (h) to attend (i) or through attention (j) to know (k) and to do (l) something of value (m), as judged by some criteria (n), to some degree (o), as judged by some criteria (p) and in the meeting, management approaches (q), methods (r), physical resources (s), verbal language functions (t), body language functions (u), groups (v) and manners (w) are used.

Do *Region IV* and its *Area B* features show in *Picture 1*? The answer is yes, they are shown as follows.

Area B Management

Feature q	approach	Teacher: The approach to management by the teacher is (1) authoritative and (2) participatory Student: The approach by the students is (1) attentive and (2) participatory
Feature r	method	Teacher: The method of management by the teacher is management by (1) objectives (2) goals and (3) problem solving Students: The method used by the students is management by (1) objectives (2) goals and (3) problem solving
Feature s	aids -- physical resources	Teacher: The physical resources used by the teacher for management are (1) a transparency and (2) an overhead projector Students: The physical resources used by the students for management are (1) handouts
Feature t	verbal language functions	Teacher: (1) questionative (2) informative (3) directive (4) emotive Students: (1) questionative (2) informative

		(3) directive (4) emotive
Feature u	body language functions	Teacher: (1) facial expressions (2) body gestures (3) body postures (4) body distance Students: (1) facial expressions (2) body gestures (3) body postures (4) body distance
Feature v	groupings	Students: (1) large group (2) small group (3) individual
Feature w	manners	Students: (1) seriously polite (2) jokingly impolite Teacher: (1) seriously polite

Interpretation 1.IV.C: Regional Map 4c

Region IV	How	by using Area C	Teaching (3)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groups	22
		Feature w	manners	23

Region IV is the *How Region* of the territory of educology. The *How Region* is composed of five areas. *Area C Teaching* is one of the areas. *Area C*, as *Area A Meeting* and *Area B Management*, is composed of Features q,r,s,t,u,v and w.

Regions I, II and *II* and *Region IV, Areas A, B* and *C* show that someone (a) and someone else (b) meet (c) to manage (d) and to teach (e) others or self to study (f) or through study (g) to learn (h) to attend (i) or thorugh attention (j) to know (k) and to do (l) something of value (m), as judged by some criteria (n), to some degree (o), as judged by some criteria (p) and in the meeting, management and teaching approaches (q), methods (r), physical resources (s), verbal language functions (t), body language functions (u), groupings (v) and manners (w) are used.

Do *Region IV* and its *Area C* features show in *Picture 1*? The answer is yes, they are shown as follows.

Area C Teaching

Feature q	approach	Teacher: The approach to teaching by the teacher is (1) cooperative (2) competitive (3) individual Students: The approach to teaching by the students is (1) cooperative (2) competitive (3) individual
Feature r	method	The methods of teaching used by the teacher are those of instruction by (1) question and answer (2) discussion (3) problem solving
Feature s	aids -- physical resources	Teacher: The physical resources used by the teacher are (1) a transparency and (2) an overhead projector
Feature t	verbal language functions	Teacher: (1) questionative (2) informative (3) directive (4) emotive
Feature u	body language functions	Teacher: (1) facial expressions (2) body gestures (3) body postures (4) body distance Students: (1) facial expressions (2) body gestures (3) body postures (4) body distance
Feature v	groupings	Students: (1) large group (2) small group (3) individual
Feature w	manners	Students: (1) seriously polite (2) jokingly impolite Teacher:

(1) seriously polite

Interpretation 1.IV.D: Regional Map 4d

Region IV	How	by using Area D Studying (4)		
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	physical resources	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners	23

Region IV **is the** ***How Region*** **of the territory of educology. The** ***How Region*** **is composed of five areas.** ***Area D,*** **as** ***Area A Meeting, Area B Management*** **and** ***Area C Teaching,*** **is composed of Features q,r,s,t,u,v and w.**

Regions I, II **and** ***III*** **and** ***Region IV, Areas A,B,C*** **and** ***D*** **show that someone (a) and somone else (b) meet (c) to manage (d) and to teach (e) others or self to study (f) or through study (g) to learn (h) to attend (i) or through attention (j) to know (k) and to do (l) something of value (m), as judged by some criteria (n), to some degree (o), as judged by some criteria (p) and in the meeting, management, teaching and studying approaches (q), methods (r), physical resources (s), verbal language functions (t), body language functions (u), groupings (v) and manners (w) are used.**

Do ***Region IV*** **and its** ***Area D*** **features show in** ***Picture 1*****? The answer is yes, they are shown as follows.**

Area D Studying		
Feature q	approach	Teacher: The approaches to studying used by the teacher are (1) self motivational (2) other motivational Students: The approaches to studying used by the students are (1) self motivational (2) other motivational
Feature r	method	The methods of studying used by the students are those of (1) reading (2) practising
Feature s	aids -- physical resources	The physical resources used by the students are (1) a transparency and (2) an overhead projector (3) a handout
Feature t	verbal	Teacher:

	language functions	(1) questionative (2) informative (3) directive (4) emotive Students: (1) questionative (2) informative (3) directive (4) emotive
Feature u	body language functions	Teacher: (1) facial expressions (2) body gestures (3) body postures (4) body distance Students: (1) facial expressions (2) body gestures (3) body postures (4) body distance
Feature v	groupings	Students: (1) large group (2) small group (3) individual
Feature w	manners	Students: (1) seriously polite (2) jokingly impolite Teacher: (1) seriously polite

Interpretation 1.IV.E: Regional Map 4e

Region IV	How	by using Area E	Learning (5)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids (physical resources)	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners	23

Region IV is the *How Region* of the territory of educology. The *How Region* is composed of five areas. *Area E Learning* is one of the areas. *Area E*, as *Area A Meeting*, *Area B Management*, *Area C Teaching* and *Area D Studying* is composed of Features q,r,s,t,u,v and w.

Regions I, II and *III* and *Region IV*, *Areas A, B, C, D* and *E* show that

someone (a) and someone else (b) meet (c) to manage (d) and to teach (e) others or self to study (f) or through study (g) to learn (h) to attend (i) or through attention (j) to know (k) and to do (l) something of value (m), as judged by some criteria (n), to some degree (o), as judged by some criteria (p) and in the meeting, management, teaching, studying and learning approaches (q), methods (r), physical resources (s) verbal language functions (t), body language functions (u), groupings (v) and manners (w) are used.

Do *Region IV* and its *Area E* features show in *Picture 1* ? The answer is yes, they are shown as follows.

Area E Learning

Feature q	approach	Teacher: The approaches to learning used by the teacher are (1) self motivational (2) other motivational Students: The approaches to learning used by the students are (1) self motivational (2) other motivational
Feature r	method	The methods of learning used by the students are those of instruction by (1) question and answer (2) discussion (3) problem solving
Feature s	aids -- physical resources	The physical resources used by the students are (1) a transparency and (2) an overhead projector (3) a handout
Feature t	verbal language functions	Teacher: (1) questionative (2) informative (3) directive (4) emotive Students: (1) questionative (2) informative (3) directive (4) emotive
Feature u	body language functions	Teacher: (1) facial expressions (2) body gestures (3) body postures (4) body distance Students:

		(1) facial expressions (2) body gestures (3) body postures (4) body distance
Feature v	groupings	Students: (1) large group (2) small group (3) individual
Feature w	manners	Students: (1) seriously polite (2) jokingly impolite Teacher: (1) seriously polite

Interpretation 1.V: Regional Map 5

Region V	When	Feature x	for some amount of time

Region V is the *When Region* of the territory of educology. This region is composed of Feature x.

Regions I, II and *III* and *Region IV*, with *Areas A,B,C,D* and *E* and *Region V* show that someone (Feature a) and someone else (Feature b) meet (Feature c) to manage (Feature d) and to teach (Feature e) others of self to study (Feature f) or through study (Feature g) to learn (Feature h) to attend (Feature i) or through attention (Feature j) to know (Feature k) and to do (Feature l) something of value (Feature m), as judged by some criteria (Feature n), to some degree (Feature o), as judged by some criteria (Feature p) and in the meeting, management, teaching, studying and learning approaches (Feature q), methods (Feature r), aids (physical resources) (Feature s), verbal language functions (Feature t), body language functions (Feature u), groupings (Feature v) and manners (Feature w) are used for some amount of time (Feature x).

Do *Region V* and its feature show in *Picture 1*? The answer is yes, they are shown as follows.

Feature x	for some amount of time	Class time of 50 minutes is divided as (1) time for review (2) time for solving problems (3) time for reading and doing Objective 1

Interpretative 1.VI: Regional Map 6

Region VI	Where	Feature y	in some situation

Region VI is the *Where Region* of the territory of educology. This region is composed of Feature y.

Regions I, II and *III* and *Region IV*, with *Areas A,B,C,D* and *E* , *Region V* and *Region VI* show that someone (a) and someone else (b) meet (c) to manage (d) and to teach (e) others of self to study (f) or through study (g) to learn (h) to attend (i) or through attention (j) to know (k) and to do (l) or through attention (j) to know (k) and to do (l) something of value (m), as judged by some criteria (n), to some degree (o), as judged by some criteria (p) and in the meeting, management, teaching, studying and learning approaches (q), methods (r), physical resources (s), verbal language functions (t), body language functions (u), groupings (v) and manners (w) are used for some amount of time (x) in some situation (y).

Do *Region VI* and its feature show in *Picture 1*? The answer is yes, they are shown as follows.

Feature x	in some situation	The situation the educational process is being conducted in is (1) a classroom in (2) a public school

Summary of Interpretations of Picture 1

Each interpretation applied a Regional Map of the territory of educology to a picture of education. The interpretations show that the picture represents the territory of educology, i.e. the process of education as conducted in public school. Next will follow Picture 2 and its interpretations.

Picture 2: Education in the Home as Territory of Educology

A single mother and her four year old son are in the bathroom of their apartment. She is preparing to get his teeth brushed as the third step in her morning procedures of getting him ready to go to day care and of getting herself ready to go to work. She has already gotten him up, dressed him and fed him breakfast. She still has to get his teeth brushed and complete the fourth step, which is to get themselves from the apartment to the car and drive to the day care centre.

The steps in the morning procedures are listed on the bulletin board in Chris's room. Next to each step are stick figures, drawn by the mother, illustrating a mother and son cooperatively performing the step. Each morning the mother has Chris look at the list with figures and discuss the steps in the morning procedures.

This morning she and her son are pleasantly going through the steps. Some mornings are not so pleasant. She is at the point of giving her son the choice of him doing his own brushing or her doing it for him.

She says, "Chris, you have your choice, either you brush your teeth or I do. But, you do not have the choice of not having them brushed. Which shall you choose?" She affectionately but firmly touches Chris on the shoulder and holds the tooth brush in front of him.

He politely takes the tooth brush and asks, "Why do I have to brush my teeth every morning? I don't like doing it."

"I believe you do not like to do it," the mother lovingly but assertively replies, but you must because that is the way to keep them free from decay." Chris jokingly wrinkles up his nose a little, makes a small whimper and says, "OK, I will brush them by myself."

The mother hugs Chris and says, "That is a choice that will help you succeed in life. Give me five."

They each gently slap each other's right hand and smile, and while Chris brushes his teeth, his mother stands next to him.

She remindingly asks Chris, "Let's review some things about day care. When you are at day care, are you supposed to or not supposed to do what your teacher, Miss Dot, says?"

Taking the tooth brush out of his mouth and looking up at his mother, Chris proudly replies, "Mommy, I am supposed to do what she says. I know that. You ask me that every morning."

"I know I do Chris," his mother says, "but it is important that you understand that Miss Dot and I are working together and that you must listen to her just as you do me. That way we can be happy at school and at home."

She stands next to Christ watching to see that he thoroughly brushes and rinses his teeth, which is the last part of step three.

Interpretation of Picture 2

Does this picture represent the territory of educology, i.e. the process of education? To see if it does, it will be interpreted by the Field Map of the territory of educology.

Interpretations

The following interpretations will be designated with the Arabic number referring to the picture, the Roman numeral referring to the region of the picture and the capital letters referring to the areas of the region.

Interpretation 2.I: Regional Map I

Region I	Who	Feature a	Someone and	1
		Feature b	Someone else	2

Does *Region I* and its features show in *Picture 2*? The answer is yes, they are as follows.

Feature a	Someone	A mother
Feature b	Someone else	Her Son

Interpretation 2.II: Regional Map II

Region II	Why	Feature c	Meeting	3
		Feature d	to Manage and	4

Feature e	to Teach others or self	5
Feature f	to Study or	6
Feature g	through Study	7
Feature h	to Learn	8

Does *Region II* and its features show in *Picture 2* ? The answer is yes, they are shown as follows.

Feature c	Meeting	Meeting of (1) mother and (2) her son
Feature d	forManagement	Management by (1) listing procedures to follow and (2) following them
Feature e	of Teaching	Mother instructs by (1) informing (2) asking questions (3) reviewing and guides practice by supervising her son's (1) brushing teeth (2) making choices
Feature f	to Study or	The son (1) looks at (2) discusses the steps and figures on the list
Feature g	through Studying	The son (1) asks questions about (2) comprehends the steps on the list (3) practises steps on the list
Feature h	to Learn	The son learns by (1) meeting (2) being managed (3) being taught (4) studying

Interpretation 2.III: Regional Map 3

Region III	What	Feature i	to attend or	9
		Feature j	through attention	10
		Feature k	to know and	11
		Feature l	to do	12
		Feature m	something of value	13
		Feature n	judged by some criteria	14
		Feature o	to some degree	15

Feature p	judged by some criteria	16

Does *Region III* and its features show in *Picture 2*? The answer is yes, they are shown as follows.

Feature i	to Attend or	The son is learning to attend by (1) being at the meeting (2) participating in the management of, teaching in and studying in the morning procedures
Feature j	through Attention	The son is learning through attention by (1) looking at (2) discussing (3) asking questions about (4) comprehending (5) following morning procedures
Feature k	to Know and	The son is learning to know (1) that the content of morning procecures is such and such (2) that the tasks involved in morning procedures are such and so
Feature l	to Do	The son is learning to do (1) tasks involved in morning procedures (2) tasks involved in paying attention to the day care teacher
Feature m	Something of Value as	The somethings of value the son is learning to attend to, to pay attention to, to know and to do are (1) the content of morning procedures (2) the tasks involved in morning procedures
Feature n	Judged by the Criteria of	Being responsible
Feature o	to the Degree of	Competence
Feature p	Judged by the Criteria of	The mother's standards

Interpretation 2.IV.A: Regional Map 4a

Region IV	How	by using Area A Meeting (1)

Feature q	approaches	17
Feature r	methods	18
Feature s	aids (physical resources)	19
Feature t	verbal language functions	20
Feature u	body language functions	21
Feature v	groupings	22
Feature w	manners and	23

Does *Region IV* and its *Area A* features show in *Picture 2*? The answer is yes, they are shown as follows.

Area A Meeting		
Feature q	Approach	Son: (1) The approach to the meeting by the son is mandatory. It is mandated by the procedures set up by the mother. Mother: (2) The approach is obligatory. She is obligated to meet with her son to home educate him. Teacher: (2) The approach to the meeting by the mother is voluntary. She has voluntarily taken the position of teacher in the home.
Feature r	Method	Son: (1) The method of calling the meeting for the son is that of legislation by the mother. It is the method of pronouncement. Teachers: (2) The method of calling the meeting for the mother is that of educational obligation. The mother is under obligation to home educate her son.
Feature s	Aids -- Physical Resources	Mother and Son: The aids to calling the meeting are: (1) list on bulletin board (2) figures on list
Feature	Verbal	Mother:

	Language Functions	(1) Questionative (2) Informative (3) Directive (4) Emotive Son: (1) Questionative (2) Informative (3) Directive (4) Emotive
Feature u	Body Language Functions	Teacher: (1) Facial excpressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	Groupings	Individual
Feature w	Manners	Son: (1) Jokingly polite Mother: (1) Seriously polite

Interpretation 2.IV.B: Regional Map 4b

Region IV	How	by using Area B	Management (2)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids -- physical resources	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23

Does *Region IV* and its Area B features show in *Picture 2*? The answer is yes, they are shown as follows.

Area B Management

Feature q	Approach	Mother: The approach to management by the mother is: (1) authoritative and (2) participatory Son: The approach by the student is (1) attentive and (2) participatory
Feature r	Method	Teacher: The method of management by the mother is management by (1) listing procedures

		(2) discussion Son: The method used by the son is management by (1) following list of procedures (2) discussion
Feature s	Aids -- Physical Resources	Mother and Son: The aids to management are (1) list on bulletin board (2) figures on list
Feature t	Verbal Language Functions	Mother: (1) Questionative (2) Informative (3) Directive (4) Emotive Son: (1) Questionative (2) Informative (3) Directive (4) Emotive
Feature u	Body Language Functions	Teacher: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance Students: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	Groupings	Individual
Feature w	Manners	Son: (1) Jokingly polite Mother: (2) Seriously polite

Interpretation 2.IV.C: Regional Map 4c

Region IV	How	by using Area C	Teaching (3)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids -- physical resources	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners and	23

Does *Region IV* and its Area C features show in *Picture 2*? The answer is yes, they are as follows.

Area C Teaching

Feature q	Approach	Mother: The approach to teaching by the mother is (1) cooperative (2) individual Son: The approach to teaching by the students is (1) cooperative (2) individual
Feature r	Method	The methods of teaching used by the mother are those of instruction by (1) question (2) answer (3) discussion and (4) practice by brushing teeth and making choices
Feature s	Aids -- Physical Resources	Mother and Son: The aids to teacing are (1) list on bulletin board (2) figures on list
Feature t	Verbal Language Functions	Mother: (1) Questionative (2) Informative (3) Directive (4) Emotive Son: (1) Questionative (2) Informative (3) Directive (4) Emotive
Feature u	Body Language Functions	Mother: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance Son: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	Groupings	Individual

Feature w	Manners	Son: (1) Jokingly polite Mother: (1) Seriously polite

Interpretation 2.IV.D: Regional Map 4d

Region IV	How	by using Area D	Studying (4)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids -- physical resources	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners	23

Does *Region IV* and its *Area D* features show in *Picture 2*? The answer is yes, they are as follows.

Area D Studying

Feature q	Approach	Mother: The approaches to studying used by the mother are (1) self motivational (2) other motivational Son: The approaches to studying used by the son are (1) self motivational (2) other motivational
Feature r	Method	The methods of studying used by the son are those of (1) listening (2) looking at list (3) practising what is on list
Feature s	Aids -- physical resources	Son: The aids to studying are (1) list on bulletin board (2) figures on list
Feature t	Verbal Language Functions	Mother: (1) Questionative (2) Informative (3) Directive (4) Emotive Son: (1) Questionative (2) Informative (3) Directive

		(4) Emotive
Feature u	Body Language Functions	Mother: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance Son: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	Groupings	Individual
Feature w	Manners	Son: (1) Jokingly polite Mother: (1) Seriously polite

Interpretation 2.IV.E: Regional Map 4e

Region IV	How	by using Area E	Learning (5)	
		Feature q	approaches	17
		Feature r	methods	18
		Feature s	aids -- physical resources	19
		Feature t	verbal language functions	20
		Feature u	body language functions	21
		Feature v	groupings	22
		Feature w	manners	23

Do *Region IV* and its *Area E* features show in *Picture 2*? The answer is yes, they are as follows.

Area E Learning		
Feature q	Approach	Mother: The approaches to learning used by the mother are (1) self motivational (2) other motivational Son: The approaches to learning used by the son are (1) self motivational (2) other motivational
Feature r	Method	The methods of learning used by the son are those of (1) listening (2) question and answer (3) discussion

		(4) practising brushing teeth (5) practising making choices
Feature s	Aids -- physical resources	Son: The aids to learning are (1) list on bulletin board (2) figures on list
Feature t	Verbal Language Functions	Mother: (1) Questionative (2) Informative (3) Directive (4) Emotive Son: (1) Questionative (2) Informative (3) Directive (4) Emotive
Feature u	Body Language Functions	Mother: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance Son: (1) Facial expressions (2) Body gestures (3) Body postures (4) Body distance
Feature v	Groupings	Individual
Feature w	Manners	Son: (1) Jokingly polite Mother: (1) Seriously polite

Interpretation 2.V: Regional Map 5

Region V	When	Feature x	for some amount of time	24

Do *Region V* and its feature show in *Picture 2*? The answer is yes, they are as follows.

Feature x	for some amount of time	Number of minutes spent on education in bathroom

Interpretation 2.VI: Regional Map 6

Region VI	Where	Feature y	in some situation	25

Do ***Region VI*** and its features show in ***Picture 2***? The answer is yes, they are as follows.

Feature x	in some	The situation in which the education process is being conducted is (1) a bathoom (2) a home

Summary of Interpretations of Picture 2

Each interpretation applied a Regional Map of the territory of educology to a picture of education. The interpretations show that the picture represents the territory of educology, i.e. the process of education as conducted in a home.

General Summary

Two pictures of education were interpreted by a field map of the territory of educology. Picture 1 represented education in a public school setting, and Picture 2 represented education in a home setting.

The Field Map of the territory of educoloy was used to show that 5 Regions, 6 Areas and 25 Features of education are represented by each picture.

The Field Map could have been used to interpret pictures of education in other social settings. Some other settings in which education can be pictured are church, government, business, factory and private school settings. Education in all of these settings is the territory of educology about which a fund of knowledge is formed by disciplined inquiry.

The territory, fund of knowledge and disciplined inquiry constitute the domain of educology.

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An Educology of Innovation: How to Utilize New Practices, Products and Ideas Better

William C. Wolf Jr.
University of Massachusetts, Amherst, USA

ABSTRACT

Many linkers are unable to set aside the time required to seek out and integrate diffusion and utilization research outcomes meaningfully. For those who have the time to examine the research literature, their commitment to the task is tested by the jargon and technical language associated with the diffusion and utilization process and by the complicated methods of research employed. Hence, outcomes of diffusion and utilization research are not drawn upon often enough by persons responsible for linkage initiatives.

While convenient forms may not exist, there are resources evolving which may link knowledge production and needs of knowledge users more effectively. Some of these resources may help linkage agents navigate more judiciously between the twin terrors of their practice -- change for the sake of change and institutional rigor mortis.

A challenge addressed by nearly all linkage agents is how and when to draw upon strategies and tactics designed to link new knowledge and needs of specific knowledge users. It is the purpose of this discourse to describe two instruments that may help individuals meet linkage challenges and to summarise selected applications of the two instruments.

Bringing Order to Knowledge Diffusion and Utilization Initiatives

"Always do right," said Mark Twain. "This will gratify some of the people and astonish the rest." Twain would probably be impressed by the number of persons who try to "do right" these days. Someone, somewhere can be counted upon to come up with the "right" new product, the "right" new way to deal with life's routine tasks and the "right" new idea on politics, fashion, school curricula and so forth. Many people aspire to do "right," but fall short of that aspiration throughout life. Such shortcomings become the instructional fodder of philosophers and social change theorists.

Just as the pervasive fragrance from the multi-hued blossoms of the crab apple tree in mid-April overwhelms individuals' sensory receptors initially, many new products, procedures and ideas saturate the varied media outlets, focus conversations and shape short-term behaviour. After a few days, the intensity of the fragrance diminishes, and within ten days to two weeks, the blossoms disappear. Many of the new products, procedures and ideas share a somewhat parallel life cycle.

Whether innovations are well-conceived or conceived in earnest does not seem to matter. Some of both kinds survive, sometimes for long periods of time. For example, someone or some group was responsible for the introduction of the lock-step graded elementary school concept, the rigid desks and chairs designed for use in elementary and secondary schools, the rectal muscle focused equipment (e.g. slides, seesaws and swings) installed on many elementary school playgrounds and the many questionable psychometric tests now in use. Conversely, someone or some group was responsible for the introduction of individualized reading programs for people of all ages, *Sesame Street* programming, state and federal legislation (in the USA) aimed at special needs of children and youth and school-based driver education programs.

Occasionally an especially well conceived innovation survives for a long period of time. An innovative computer assisted instructional system called PLATO (Programming Logic for Advanced Teaching Operations) was conceived and developed at the University of Illinois, Urbana, during the 1960s. PLATO was conceived as a computerized tutorial with feedback. It evolved into a complex product which included an operating system, an authoring language and hardware (all marketed by Control Data Corporation during the 1970s). Developmental costs of the system are in the vicinity of one billion dollars.

PLATO users logged more than two million hours of terminal time between 1972 and 1976. The system continued to be used extensively throughout the 1970s and into the 1980s. More than 75 systems now operate across the nation (50 within industry). The systems are linked to over 200 institutions of higher education. Recent PLATO software advances reach into microcomputer applications (Driscoll and Wolf, 1989).

PLATO is a most complex innovation. It has been developed, demonstrated, implemented and sustained for nearly 30 years. The innovation has met needs successfully, but not to the degree most developers and financial supporters had expected. Differences between aspirations for PLATO and achievements with the system exemplify the difficulty of "doing right."

The life cycle of innovations attracted the attention of individuals in anthropology, sociology, educology, agriculture and medicine during the 1920s, 1930s and 1940s. With each passing decade, new signatures representing the most diverse disciplines appeared in print. Their interests and contributions are coalescing within a new research focus called *diffusion research* by some, *technology transfer research* by others and *social change research* by still others.

These researchers have learned much about relationships among (a) the process of innovation adoption, (b) attributes of innovation, (c) adopter characteristics and (d) the rate of adoption of innovations (Rogers, 1983). Unfortunately, what has been learned about these kinds of relationships has not been translated into convenient forms which are useful for linkage agents.

Linkage agents may be a new term for some. Persons who engage in linkage are often referred to in contemporary American research literature as *linkage agents* or *change agents* or *linkers*. These are people in a variety of disciplines who have assumed responsibilities in recent decades for bridging gaps which exist between knowledge producers and knowledge users within organisations. Whether they are called a county agent, field representative, idea person, school principal, marketing coordinator, or sales representative, for example, all share a common concern -- linkage -- the connection between sound practice and well founded knowledge which informs and guides sound practice.

Knowledge is not always as clearly expressed as it might ideally be, and it is not always as readily available as we would like it to be. The desired knowledge must be gleaned from a variety of resources -- information repositories, journals, books and so forth. The knowledge must be analysed by the linkage agent, and it must be adapted to or adopted within personal practice.

Many linkers are unable to set aside the time required to seek out and integrate research outcomes meaningfully into the diffusion and utilization process. For those who have the time, sometimes the technical language, the special terms and the description of research methods present great challenges to the patience, understanding and acceptance of those responsible for linkage initiatives.

While convenient forms of research reports may not exist, there are resources evolving which may link knowledge production and needs of knowledge users more effectively (Fleming and Buckles, 1987). Some of these recources may help linkage agents navigate more judiciously between frivolous change and irrational conservativism within educational institutions.

The Knowledge Implementer's Challenge

A challenge addressed by nearly all linkage agents is how and when to draw upon strategies and tactics designed to link new knowledge and needs of specific knowledge users. It is the purpose of this discourse to describe two instruments which may help individuals meet linkage challenges. It is a second purpose to summarise selected applications of the two instruments.

My associates and I have investigated problems related to linking knowledge production (e.g. the PLATO system) and needs of knowledge users (e.g. teachers responsible for the development of mathematics literacy at the elementary school level) for more than two decades. Since the middle 1970s, we have focused upon how to apply diffusion/utilization research outcomes. We have encountered many formidable challenges, e.g. the paucity of verified research outcomes related to the utilization of knowledge, an inability to apply conventional reliability and validity

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modus operandi during field tests of linkage instruments developed and difficulty establishing cause-effect relationships between linker initiatives and changes transpiring within organisations. These challenges were addressed aggressively, but they have not been resolved -- at least not yet. Positive outcomes were realised in a variety of contexts, but they could not be directly attributed to the application of the instruments which were utilized. These positive outcomes sustained our desire to keep trying.

Linkage Instruments

One of the important outcomes of our endeavours was the development of two instruments which have been designed to meet the needs of persons aspiring to link knowledge production and needs of knowledge users. The first instrument is the ***Wolf-Welsh Linkage Methodology*** (WWLM). It is a linkage methodology which has been designed to guide linkers' actions. The second instrument is the ***Wolf Knowledge Diffusion/Utilization Inventory*** (WKD/UI). It is a survey inventory which has been designed to generate data needed by linkers.

The WWLM is the outcome of years of research which was aimed at the identification of classes of antecedent, manipulable and outcome variables believed to be of importance to the process of linking knowledge production and needs of knowledge users. The instrument which has evolved (six revisions) is akin to a road map which specifies a starting point, alternate routes and a destination. It adds order and direction to the linkage process within environments not accustomed to either order or direction.

The WWLM consists of seven distinct but inter-related parts. Each part is made up of two components. The first is a brief orientation statement intended to clarify the nature of information sought. The second is a set of recommendations aimed at acquiring needed information. Whereas the seven parts are presented sequentially, their inter-related nature calls for application of specific parts in conjunction with opportunities presented. The seven parts are entitled:

I. Qualifying for Linkage Responsibility
II. Targeting an Audience for a Change Initiative
III. Defining Knowledge to be Adapted or Adopted
IV. Modifying Knowledge Selected to Accommodate Identified Needs of a Targeted Audience
V. Obtaining Commitments from Key Persons to Initiate and Sustain a Change Undertaking
VI. Conceptualizing and Implementing a Linkage Plan
VII. Ascertaining the Impact of Selected Knowledge Upon a Targeted Audience

These parts prescribe a relevant frame of reference within which individual ingenuity is encouraged and is able to flourish.

What accrues to persons who choose to incorporate the WWLM as part of their linkage repertoire? First, these persons quickly get the "big picture" and the "little pictures" related to a change initiative. Second, these person are told what to do in order to make fruitful things happen within an environment earmarked for change. Third, these person become the recipients of systematic feedback pertaining to the viability of specific plans made and specific action taken. And fourth, the methodology facilitates the production of physical traces during a change initiative which can be studied to determine pluses and minuses of the effort.

The WKD/UI has been designed for used by persons who assume responsibility for varied kinds of organisation change initiatives. It is intended to be employed along with the WWLM. The Inventory provides persons making use of the methodology with important data. These data can be converted to numerical scores, which put into perspective relationships among (a) an organisation's capacity to change, (b) organisational needs identified and (c) plans conceived to meet the needs.

The Inventory consists of five separate sections, each of which includes four items. Up to four points can be earned for each item. The possible scores range from zero to 80. Scores obtained can be used to judge the viability of four different types of organisational change initiatives: awareness-interest, analysis-reaction, pilot test, adoption-adaption.

Of the five parts of the WKD/UI, *Part One* highlights characteristics and commitments of the person or persons responsible for the linkage. *Part Two* focuses on conditions for change within targeted environments. *Part Three* emphasises characteristics of the set of innovations to be adapted or adopted. *Part Four* places emphasis upon characteristics of environments targeted for change. *Part Five* focuses upon characteristics of selected linkage strategies and tactics.

What are the benefits of using the WKD/UI? The Inventory provides data which can be used to reduce guesswork associated with organisational change. These data can be used to address problems which arise, and they can be used to alter plans conceived prior to the commitment of resources. In addition, the Inventory provides objectively derived documentation to support some or many linkage decisions.

Both instruments have been revised six times over a number of years. The revision process has improved the instruments in several ways. It has reduced the prolixity of the methodology. It has improved relationships between specific elements of the the theoretical configuration and specific elements of both tools. It has increased the scope and flexibility of the methodology. And it has expanded applications of the Inventory.

More information about the two tools is available in the March, 1988, issue of the periodical, *Knowledge: Creation, Diffusion, Utilization* (Sage). Theoretical roots of the two tools are summarised in this article (Wolf, 1988). The sixth revision of both tools is available in Bass and Dills *Instructional Development: The State of the Art, II* (Kendall-Hunt Publishing Company, 1984). Direct inquiries to the author of this article (W.C. Wolf, Jr.) at the University of Massachusetts at Amherst are welcomed.

Linkage Instrument Application

Most applications of the two tools have occurred under my direct or indirect supervision. These applications contributed to a number of interesting outcomes, for example,

(1) selected operations within a New England community college were altered -- in several instances substantially -- by college

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faculty and staff;

(2) a task force assembled by the Mayor of a large New England city obtained community support for a referendum to finance the construction of a large urban high school, an outcome not deemed likely by most municipal leaders;

(3) a collaboration between a school system and a university brought about an awareness of an adoption of selected effective schools research outcomes within a number of secondary schools;

(4) the WWLM, when studied by two colleagues in conjunction with panelists' reviews of proposals submitted to federal and state funding agencies, predicted outcomes consistently and also pointed to funded proposals most likely to fulfill intended aspirations.

Utilizing the two instruments involves several steps:

(a) training persons to be able to implement the two instruments;

(b) locating an organisational context about to embark upon a change venture;

(c) obtaining resources to facilitate work envisioned; and

(d) evaluating both the instruments' implementation and consequences of the change initiative.

Once steps (a) through (c) have transpired, decision-making time arrives.

When data begin to flow as a consequence of instrument utilization, it is up to the instrument user to make appropriate applications within the context of an organisational change initiative. Some persons draw upon data generated more effectively than others; hence, variations in the calibre of decision-making can occur across instrument users. Considerable data utilization variance is not desirable obviously. Enough has been learned about such data usage variance to regard it as a potential problem. More instrument application work is required to ascertain the seriousness of the problem.

My former students and people exposed to the instruments during short-term training experiences are most likely to try the instruments. A small number of applications can be attributed to published materials describing the instruments. Generally, the closer a user of the WWLM and WKD/UI is to me, the more likely the instruments are applied as intended.

Conclusions

Persons responsible for organisational change initiatives experience both success and failure eventually. Since many of these individuals aspire to "always do right," as Mark Twain suggested, they are receptive to *modus operandi* which may help them work better rather than harder. Evidence accumulating from field applications of the WWLM and the WKD/UI suggest both tools deserve a place in their professional portfolio.

The instruments, which are based upon results of considerable inter-disciplinary research enterprise, will facilitate conceptualisation and implementation of organisational change initiatives. They will facilitate the orderly production of records related to selected strategy and tactics. They will enable linkers to study relationships between actions taken and subsequent outcomes of linkage efforts. And they will make possible meaningful independent replication of organisational change enterprises. In short, such tools may enable linkers to appraise aspirations more realistically and to engage in more productive work.

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An Educology for Science: Teaching Sciences in the 90's

C. O. Ameh
University of Jos
Jos, Plateau State, Nigeria

ABSTRACT

There has been a shift in emphasis on science teaching and learning as a result of the great concern for improving science learning all over the world. Nigeria in particular has made drastic changes in science curriculum. This is evidenced in the various science subjects (physics, chemistry, biology, integrated science, etc.) panels and workshops arranged by the Science Teacher Association of Nigeria (STAN) in the 1989/90 STAN year.

The themes for the various workshops and panels show the concern for science learning. Teaching and learning are two sides of the same coin. A teacher can not claim to have taught if no one has learnt just as a trader can not claim to have sold when no one has bought. Teaching science entails much more than teacher verbalisation.

An analysis is offered here of the nature of science and the nature of the learner in terms of teaching. This analysis is offered as a basis for providing a guide for developing a better understanding of the phenomena of science teaching and for improving science teaching through providing better ways of preparing individuals who wish to teach science.

Introduction

The present teaching and learning in science classrooms in Nigeria seem inadequate. The level of science teacher competence needs to be raised to the level that will allow teachers to teach students with a focus on understanding. Teachers need to do more than merely lecture and require students to learn rotely and achieve simple recall of knowledge.

Research findings have shown that uttering definitions, reciting factual knowledge and memorizations are not science (Ameh, 1987). In probing teacher's understanding (Ameh, 1987), it has been found that even teachers who are rated very high in ability have demonstrated lack of understanding in the science concepts that they teach. This is consistent with the research results of Osborne (1980), who found that the ability to provide an acceptable definition and the acquisiton of a useful scientific concept were not the same thing.

Most teachers whose understanding of science concepts appear inadequate will all have passed (even at distinction level) examinations which required the writing of definitions. The present emphasis on science learning the world over requires much more than mere passing examinations which require recall of factual knowledge. This makes it imperative to suggest approaches for teaching which aim at understanding, rather than memorising and juggling facts. Hartley and Davies (1976) suggested four approaches for effective science teaching. Although these approaches are not new to science educators, these four approaches are again presented, with the new emphasis on concept learning and process approach to learning. These approaches are (1) advance organisers, (2) behavioural objectives, (3) overviews and (4) pretests. The value of these techniques, as pointed out by Hartley and Davies (1976), is that advanced organisers clarify the learning task ahead by providing a conceptual framework which pupils can subsequently use. Behavioural objectives inform the pupils about what it is they are to accomplish. Overviews prepare them for the learning task ahead, and pretests alert them to specific things which they need to know. However, it will be useful to discuss the nature of science and the nature of the learner before elaborating upon these issues.

The Nature of Science

The nature of science demands that science teaching utilizes methods which help to promote an understanding of fundamental concepts in science. Teachers' lack of understanding in science is a result of their own training. Teacher trainers begin teaching at colleges of education with incorrect assumptions about fundamenal scientific concepts (Ameh, 1987). It is easy to infer that because teachers (in the course of their training) did not experience methods which foster understanding of science concepts, so they do not use such methods in their own classrooms. It is very common to see graduates of science (and even science teachers) who cannot use their knowledge of science to interpret, explain or describe real situations. This situation is consistent with a teaching approach which emphasises definitions and theory, but fails to consider application and use.

In considering the nature of science and science teaching, teachers should avoid the use of only textbooks. Textbooks present one-way communication which enhances the lecture approach. The lecture method encourages memorisation and rote learning. By this method, students will be able simply to recall factual information. According to Brumby (1984), the lecture method promotes passive learning. Brumby has argued that the lecture method creates insufficient conflicts within the students' minds to alter their existing understanding. Moreover, science is an investigatory enterprise, and to understand science, students need to identify and practise certain processes characteristic of scientific investigation. The lecture method does not provide opportunities for this.

Nature of the Learner

A large number of studies in the last decade have reported children of all ages hold a wide range of misconceptions which relate to scientific knowledge. Reports from other parts of the world, especially from the Western World where teaching resources are seemingly inexhaustible, show students to have alternative conceptions (i.e. alternative to and in conflict with scientific concepts). Alternative conceptions in science seem to be universal, and it may well be that alternative conceptions are similar across the world (cf. for example, Ameh and Gunstone, 1986). In all the studies reported, it is clear that students do not come to any lesson with a "clean slate." Children bring with them to their school ideas, expectations and beliefs concerning natural phenomena which they have developed to make sense of their own past experiences (Driver, 1981).

Given the fact that students typically already have alternative conceptions which they bring to science lessons, teachers are placed in a position of having to attempt to change these conceptions. The children's alternative conceptions are typically very firmly held, and students' ideas can be amazingly tenacious and resistant to change. Champagne, Gunstone and Klopfer (1983) have found that students' alternative conceptions are both pervasive and persistent. Studies prior to Champagne, Gunstone and Klopfer have also recognised and analysed students' alternative conceptions. For example, Gagné (1965) referred to alternative conceptions as prior capabilities. More recent studies (Gunstone and White, 1980; Osborne, 1982) have referred to alternative conceptions as prior concepts or prior knowledge. Prior knowledge is regarded as knowledge acquired intuitively or otherwise by a learner before formal instruction. Gagné (1965) recognised the existence of prior capabilities and the crucial importance of these in drawing distinctions among the varieties of conditions needed for learning. He stated:

> The initial capabilities of the learner pay an important part in determining the conditions required for subsequent learning. [Gagné, 1965:21]

This argument has been substantiated by many subsequent researchers (for example, West and Fensham, 1974).

Prior capabilities play an important part in the learners' subsequent learning, and they can both promote and impede new learning. Fensham (1972) pointed to the possibility of a negative effect of prior capability on subsequent learning. He argued that unexpected and undesirable transfer may occur. Gunstone and White (1980) found that prior concepts in physics inhibited students' learning of physics concepts.

Osborne (1982) stated that when prior concepts conflict with what is taught, children learn the taught science by rote. When it comes to applying the concept outside of the classroom, it is the prior concept which is used rather than that which has been taught. Hewson has stated that the knowledge which people already possess is of critical importance in their attempts to make sense of their experience.

The implication of prior concept learning for teaching is clear. The teacher must determine whether learners possess the pre-requisites for the new learning and then provide them with those they do not possess.

In situations where learners have knowledge which conflicts with science knowledge, it is advisable to change these conflicting views before presenting any new knowledge. This process is referred to as *conceptual change*. Conceptual change, according to Hewson (1981), can happen in an

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individual in a number of different ways. These can be the addition of new conceptions through further experience, or through personal development by the individual. This could come through contact of individuals with other people or through the effective utilization of recent approaches in science teaching by the teacher. Hewson suggests that the teacher should present any new idea intelligibly, plausibly and fruitfully in order for the learner to accept the new idea and at the same time discard the undesirable idea.

Suggested Approaches for Teaching Science in the 90's

(1) Organisation of the Class

The first step to effective teaching is the organisation of the class. This includes the appearance and the way the teacher conducts him or herself. Important questions to consider include the following. What is the nature of the interaction? How do the students perceive the teacher? What is the teacher's concept of the students he or she teaches? What is the communication level of both the teachers and the students? What style of teaching does the teacher use which in turn elicits what behaviour from the students? All these combine to make the dynamics of teaching.

(2) Pre-Instructional Strategies

Teacher reflection on the syllabus (that is, how do teachers perceive the content in terms of the concepts involved and what it aims to achieve) is another crucial aspect of science teaching. This is similar to the advance organiser pointed out by Hartley and Davies (1976). Advance organisers clarify the learning task ahead by providing a conceptual framework which pupils can subsequently use. This is an area which is badly neglected by lecturers who train the teachers. Ameh (1987) undertook research to find out whether or not lecturers teach this process of reflection to their students. She found that lecturers agree that the process of reflection on the syllabus prior to teaching is very important, but they do not teach this process to the student teachers. Teacher reflection goes hand in hand with basic teaching philosophies of lecturers and with particular concerns for existing conceptions and cultural issues in student learning. It appears that teacher trainers are not aware that culture might have an effect on their students' learning of science.

Cultural beliefs have been reported to be prevalent even in Nigerian university undergraduates (Adeyinka, 1982). Adeyinka found a significant proportion of undergraduates to depend absolutely on the supernatural in answering questions about natural phenomena, while other students were strongly influenced by beliefs in the supernatural. Okebukola (1986) also found that one factor affecting science learning among Nigerial science students is the prevalence of superstitious beliefs. He states

> The data gathered during the investigation are suggestive of the possible implication of a cultural factor-belief in superstitions and taboos in students' acquisition of such misconceptions . . . (p. 9).

Cultural effects are also aspects which hinder effective science teaching and learning. Teachers should consider the cultural implications in addition to reflecting on the concepts to be taught. If there is no attempt to change those cultural beliefs which hinder understanding and use of science, it will be unlikely that teachers may be effective in the science teaching of the 90's.

Another important part of pre-instructional strategies is behavioural objectives. They give direction, and they serve as a beacon for what it is teachers and students are to accomplish. From years of my supervising students in their teaching practice, it is evident that this is an area which teachers find very difficult. Even if teachers state behavioural objectives, they are usually of the lower cognitive level. Achieving such low aims in teaching does little to improve learning. Behavioural objectives should be stated using the higher cognitive levels, especially those of interpretation and application. We often find our science graduates unable to interpret the scientific enterprise outside the classroom or to apply science knowledge to real life situations.

Along with behavioural objectives, teachers should give consideration to the type of questions they ask in their teaching. Research has revealed that teachers and students alike do not understand science concepts. But science teachers have passed examinations to be where they are. This situation shows that examination questions asked in science and questions asked in the teaching process may not have been probing enough. They may even have been only of the lower cognitive order. In order to probe understanding among students adequately, teachers should resort to varying the cognitive level of questioning as well as maintain high order cognitive questioning.

The pretest is also a pre-instructional technique which is often neglected by teachers. As mentioned earlier, the child's mind is not an empty slate. Often, children come to the science lesson already educated in phenomenological science which quite often is at odds with the scientist's science. The children's prior learning prevents science learning. It is therefore suggested that pretests of whatever concept is to be taught should be given. These pretests will alert the learners to what they need to know as well as open the teachers' eyes to what they might not otherwise have been expecting.

The Instruction

As of now, we do not have an adequate comprehensive theory of teaching and learning, and it is difficult to point to a particular teaching strategy for teachers to use. Whatever method is used is acceptable as long as learning takes place. However, there have been attempts to develop learning theories. Notable among such theories is that developed by Osborne and Wittrock (1983). Their *Generative Learning Theory* gives a general description of the processes which a learner goes through in constructing new knowledge. Various educologists have devised different methods to effect learning, e.g. the use of concept maps (Edwards and Fraser, 1983; Novak, 1980). Champane *et al.* (1983) applied the theory and empirical findings of cognitive pshychology in making explicit an instructional design model for initiating cognitive change.

In attempting to change students' ideas towards a more scientific

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orientation. Gunstone and Northfield (1986) used the idea of fruitfulness successfully with school students. In this approach, students were asked to keep a "think book." In a their think books, students rote their ideas about a wide variety of things. These were often discussed. Gunstone and Northfield reported that students perceived that the approach helped them to understand science. In addition, White (1987) suggested that a potentially fruitful way of overcoming the capacity of human beings to reconstruct episodes and to maintain different conceptions for different contexts is to get people to reflect on their knowledge and to check the meaningfulness and the extent to which new information accords with present beliefs.

Teachers of Teachers

For the 90's, it is suggested that the teachers of teachers re-assess themselves in terms of teacher preparation. Teachers in most cases teach the way they have been taught. The whole thing is a vicious circle. We might tend to blame the classroom teachers, but they are only perpetuating what they have been taught. It is likely that aspects of the modes of teaching used by the teachers of teachers do not foster understanding. Knowledge which aims at understanding should be an integration from different sources. Teaching intended for understanding should embody more than simple recall of factual information. The understanding sought for teachers should include both substantive and syntactic knowledge of science (Schwab, 1964) and pedagogical knowledge (Schulman, 1984). The latter is the knowledge and skill which the teacher requires to teach effectively, i.e. the praxiological educology of teaching (Christensen, 1987). To provide these types of knowledge, the teaching of teachers should be structured on the *spiral model*. This term refers to the mode of teaching which revolves and stretches existing knowledge. The present approaches resemble more an *onion model* of teaching, where a learner's knowledge is supposed to be accumulating with new knowledge piling on existing knowledge and not interacting with it. In this case, no reference is made to any fundamental knowledge of the learner which is often at odds with science.

The demand on teacher education is particularly pointed if teachers are to have some understanding of the ideas which children bring to science lessons, if the teachers are to be oriented to build on and modify children's ideas toward a more useful scientific perspective and if they are to be generally sensitive to and supportive of pupils' ideas and reasoning processes.

Conclusion

If we are to succeed in our aims for science, technology and mathematics of the 90's, we must re-examine our teacher training programs. What do the teachers of teachers do and think? How do they teach the teachers? These we often overlook. Finding academically strong and devoted or committed teachers of teaching is possibly even more problematic than developing and providing curricular materials.

To achieve the objectives of science, technology and mathematics, the emphasis of teaching of the 90's should be on concept learning. Science teaching should be seen as a process rather than a product, and above all questioning skills should be improved to probe student understanding. Questions should be used to gauge the depth of understanding of students, and questions should be used to help students to reflect on their knowledge. Students need to be made to check the meaningfulness as well as the extent of their knowledge.

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An Educology of Teacher Professional Identity: A Revisitation of the Concept of Teachers' Professional Environment

Lya Kremer-Hayon
University of Haifa
Haifa, Israel

ABSTRACT

An investigation was made of the concept of professional environment as perceived by teachers. A comparison was made of the teachers' conception with the concept definitions provided in the relevant literature. A group of 20 teachers of varying seniority were interviewed in depth. They were asked to elaborate upon what the concept of professional environment meant to them. The interviews were submitted to content analysis. The analysis yielded several broad categories of concern in relation to professional environment. These categories included professional vs. general and extrinsic vs. intrinsic. Within these broad categories, several topics were included, e.g. feedback, accountability, administration, school atmosphere, subject matter, contemporary art and technology, politics, family relations, personal reading. A discussion of the findings and a comparison with varying concept perceptions in the research literature are presented.

Aims

This study is aimed at (1) disclosing the meanings which teachers in different settings attach to the concept of professional environment and (2) comparing them to the concept meaning as derived from the relevant literature on professional environment. Should the meanings derived from these two sources differ, some problems are apt to emerge. Attempts at improving environmental conditions, for instance, may prove to be ineffective, if teachers' perceptions of their environment are not considered. Theoretically, the knowledge gained about the meanings which teachers attach to the concept of professional environment is apt to broaden the perspective of this concept. Practically, it may serve to guide educational policy and decision makers in creating better professional environments for teachers.

Perspective

In past research, many attempts have been made at identifying and understanding antecedents of teacher behaviour and of teacher professional development. Following the well known Lewinian formula of B = f(ExP), most studies conducted with this intent point to personality, environment and the interaction between them as the sources of deriving such information. Murray (1938) elaborated on this formula by referring to *personality* as *characteristic tendencies to move in the direction of certain goals* and to *environment* as *an external situational counterpart which supports or inhibits the actualization of personal tendencies*. While environment is a concept associated in sociological studies with collectivity, interpersonal relationships and group behaviour, personality is linked in psychological studies with idiosyncracy and individuality. Opp and Humel (1973) refer to the concept of human phenomena as *holistic* when the system as a whole is considered and as a *micro cosmos* when the individual is the target of inquiry. However, it is worthwhile noting that sociological statements were in their original derived from psychological statements and that there is

> not one single sociologial term that is not definable by a psychological term ... and not one single sociologial hypothesis that is not derivable from a psychological one. [Humel and Opp, 1971]

Following the propositions regarding the socio-psychological link and research studies which point to the effects of environmental variables on professional activities, the present study focused on the sociological aspect -- teacher environment -- and on the psychological aspect -- teachers' perceptions. The study aimed at disclosing some of the meanings which *teachers* attach to their professional environment as a potential source of information for illuminating, clarifying and enriching the content of this concept.

The term *professional environment* is here proposed in order to avoid the connotations attached to concepts which are already in use and thus to leave some open space for additional meanings and perceptions which may emerge. However, the consideration of some of the related concepts is in order.

The *school climate* concept originated with the Lewin, Lippit and White study (1939). It was based on the *field theory* proposed by Lewin (1936), and it was followed by a growing number of studies in which various conceptualisations have been offered. In the most general terms, *climate* refers to the overall beliefs, norms, socio-educational experiences concerning educational processes (Fox and Bores, 1973; Sharan, 1980), as well as to organisational and administrative aspects of the school and of the classroom, depending upon the unit of reference. Similarly, Lezotte *et al.* (1980) conceive of *climate* as norms, beliefs and attitudes which are reflected in the organisational patterns which enhance or restrict pupil achievement.

Schein (1972) uses the concept of *Organisational Culture and Leadership* and conceives of culture as a pattern of basic assumptions developed to cope with external adaptation and internal integration. The meaning of the term *Organisational Culture* involves the basic assumptions and beliefs shared by members of an organisation, the philosophy which guides its policy, its dominant values, its rules of the game for peer relationships, the feeling of climate shared by its members, the shared concepts of its "reasons to be," a common language and ideology. In discussing the *ecology* of teacher professional development, Joyce (1983) relates ecology to those factors which provide school support and create a context in which teachers are able to develop their professional potential. The patterns of such a context take shape as a result of the formal organisational properties of the school. A rather interesting distinction between *mesosystem* as the interrelationship between two or more micro-systems, such as school, family, work, and *exosystem* described as settings which may affect a person although he or she may not be involved in them directly, was suggested by Bronfenbrenner (1979).

Similarly, Griffin (1983) suggested to differentiate between the *inner circle* and the *outer circle* of a school system. The first pertains to the regularities, routines, conventions and expectations; the second, to societal constructs and citizen satisfaction.

Additional meanings attached to *educational environment* may also be deduced from the factors which constitute the scales which attempt to measure it. Following are a few examples which may give useful information about these meanings. *The Learning Environment Inventory* (LEI) (Anderson and Walberg, 1974, 1982) consists of 15 scales: cohesiveness, diversity, formality, speed, material environment, friction, goal direction, favouritism, difficulty, apathy, democracy, cliqueness, satisfaction, disorganisation, competitiveness. *The Environmental Scale* (Tricket and Moos, 1973) consists of involvement, affiliation, teacher support, task orientation, competition, order and organisation, rule clarity, teacher control and innovation. A college and university *Classroom Environment Questionnaire* developed and validated by Fraser *et al.* (1987) consists of seven scales: personalization, involvement, student cohesiveness, satisfaction, task orientation, innovation, individuation. These are some examples of scales developed to measure classroom climate and from which the underlying concepts may be derived.

As far as the school climate with reference to teachers is concerned, the Halpin and Croft *School Organizational Climate Questionnaire (SOCQ, 1963),* served as a basis for the development of a number of scales. Following these scales, Zak (1987) developed a questionnaire consisting of several sub-scales: principal leadership, supervision role, teacher relationship, school services, autonomy, school prestige, load.

The research studies in which these and various other concepts of environment have been used are too numerous to cite here. The comprehensive work of Fraser on the *Study of Learning Environments* (1987) may serve as an informative source on this topic. The content of these scales does not necessarily congrue with teachers' perceptions of what their school environment means to them. Thus, it may be that conclusions drawn from such studies pertain to categories which constitute environment in the mind of the researchers but not in that of the subjects who have been studied. As mentioned, attempts made at understanding teacher behaviour and professional development for practical purposes had better make use of categories which are relevant to the populations

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studied. To understand the inner world of teachers, the researcher must approach it from the subjects' perspective and "view their culture just as the people he is studying view it."

These propositions served as the incentive for conducting the present study, which intends to detect commonalities and idiosyncracies of teachers' perceptions of their *professional environment* and to compare them to the already existing definitions.

Method

As the study does not suggest *a priori* categories, but rather expects them to emerge from the analysed data, interpretive methods of research seemed most appropriate (Erickson, 1986).

The study subjects were 20 elementary school teachers, 10 of whom were in their first five years of experience. The experience of the other 10 ranged from 12 to 15 years. These ranges of years were selected to allow for some time perspective to emerge, as well as to provide an opportunity to detect possible differences generated by years of experience. Each of these two groups included teachers who taught in urban areas and in *kibbutz* settlements. The list of teachers was provided by the superintendent (the chief administrative officer) of a large district school in the northern part of Israel. The research requested the superintendent to identify a group of teachers which most probably represented the general elementary school population. The selected teachers were interviewed in depth.

The interviews were semi-structured. They started with an open-ended question to allow for any reference regarding the topic under study to emerge. After some rapport had been reached, the following statement opened the interview:

> Many educationists refer to the concept of teacher *professional environment*. There are many definitions of this environment, however, we would like to gain some information regarding the ways in which the *teachers themselves* perceive this concept, so would you please relate to the question: What is *your* professional environment, and what does this concept mean to *you*?

The interviewers were instructed not to stop the flow of talk and not to interfere unless they felt that the interviewee reached an impasse. In this case, they were asked to probe on items which seemed to be of special interest and which had not been made clear enough. The interviews lasted for an hour, on the average, and they were carried out by two doctoral students, who had been specially trained for this purpose. The interviews were protocolled verbatim and analysed by two independent analysers after an agreement of 85% had been achieved. The unit of analysis was a thought unit in the form of a sentence or a proposition, from which key concepts/ideas were derived. The latter were listed and classified into broader categories (Fox, 1969).

Results

As mentioned, the content analysis generated the features which the teachers attached to the concept of professional environment. These were

Table 1: Distribution of Topics Reference in Percentages

Professional 80%		**General 20%**	
Extrinsic 55%	**Intrinsic 20%**	**Extrinsic 10%**	**Intrinsic 15%**
Sources of Feedback 23%		Contemporary art and new technologies	Family relations
Principal Supervisor Pupils Parents 15% Public Peers	Self evaluation 8%	5%	10%
Accountability 15%		Public opinion and politics 5%	Own reading 5%
To others: public, authority 10%	To oneself: inner world (own philosophy, attitudes, belief system 5%		
School atmosphere: Ethos, norms, work morale, school culture, teachers' room 15%			
Administration: Secretarial help Order, rules structure 10%			
Subject matter 12%			
Materials, curriculum 8%	values, goals 4%		

further classified into broader categories of references. Within one of these categories a distinction between professional bound and general features was made. While *professional* pertained to features characteristic of teaching mainly, such as teacher-pupil relationship, *general* might have been referred to by non-teachers as well. An example of the latter is government policy.

Within each of these two relatively broad categories, two more specific ones emerged: *intrinsic* and *extrinsic*. Following are some examples which represent these groups. Teacher-pupil relationships represent the professional-intrinsic category. Educational authorities represent the professional-extrinsic category. Involvement in cultural activities and government policy represent the general-intrinsic categories respectively. Table 1 presents the distribution of these categories.

The next analysis provides a more specific picture. The professional-extrinsic features were most frequently mentioned (55%). Next came, in descending order of frequency, professional-intrinsic, general-intrinsic and general-extrinsic features, amounting to 20%, 15%, 10%, respectively. However, several topics were classified as both extrinsic and intrinsic, depending upon the connotations attached by the interviewees themselves. These were *sources of feedback* (23%), *accountability* (15%), *subject matter*(12%). From the extrinsic angle, they amounted to 15%, 10% and 8%, and from the intrinsic angle, to 8%, 5% and 4% respectively. *School atmosphere* (15%) and *school administration* (10%) were classified as extrinsic. The *general* classification yielded 10% of the topics for the extrinsic and 15% for the intrinsic categories. *Contemporary art, new technologies*(5%) and *public opinion* (5%) were the topics mentioned in the extrinsic category, and *family relations* (10%) and *own reading* (5%) in the intrinsic category.

Excerpts from Protocolled Interviews

Following are some excerpts from the protocolled interviews which may serve to illustrate more specifically the meanings classified under each category.

Sources of Feedback

> My principal is very supportive. I like to have him observe my classes and react to my way of teaching, some of the ways that I use, I learnt from him, his criticism is very important to me.
>
> My supervisor comes rather seldom, she is not very involved in my classroom, her advices do not make sense to me, but I know that some of my colleagues are happy to have her observe their teaching and claim that her supervision is helpful.
>
> My pupils are the real persons that count ... they provide the best and most honest feedback, they can tell me if I explained well and clearly. The tests they write tell me the whole story.

However, another teacher noted,

> I can't rely on my pupils' preferences and reactions to my teaching, they are too young to know what's good for them ....
>
> If it were not for the parents I'd teach differently, but they are a source of stress, they are interested in their children, and in the amount of information they get, and do not value my ways of teaching that is intended towards developing an *inquiring mind*.

A rather extreme way of expression was

In my class, behind the door, I'm the boss, it does not really matter to me if I please somebody *my environment is myself; my thoughts, my values, my beliefs*....

Accountability

I am responsible for what happens in my class, for the amount of learning that takes place. I owe it to the authorities that pay my salary it's my moral duty to respond to the societal demands of which I am a part ....

School Atmosphere and Administration

The way I am treated by my colleagues, the support I find in the teachers room after a hard day are very important to me .... The school is a second home for me.... I feel trusted ....

I know that I'm not alone in my endeavours ... there is always someone out there to listen and help.

I get very frustrated when I get no administrative help ... I'm burnt out ....

Subject Matter

When I get good learning materials, I feel at ease, I teach better. I'm more confident, lack of materials, the need to prepare them myself make me nervous and affect my teaching.

Intrinsic Orientation

The intrinsic orientation took the form in expressions such as

When I teach literature, the values inherent in the story, the extent to which I identify with the ideas expressed in it consitute the world upon I build, from which I derive enthusiasm and motivation to educate, to influence the pupils....

General References

The general references may be illustrated by the following excerpts.

My visits to museums have an impact on myself as well as upon my students, as I tell about them. I try to influence them to visit museums and listen to concerts.... I also integrate my impressions in my teaching.

My family is very supportive, which makes my work a lot easier.

My disputes at home make me tense and intolerant. I'm aware of it when I teach.

Differences between the Two Groups of Teachers

An additional analysis pointed to several differences between the two groups of teachers, however, because of the small number of subjects, only a tendency can be point to. While the group of the relatively new teachers focused mainly on the professional categories, the more senior teachers referred to general categories of envionrment as well. Within the professional domain most of the intrinsic references were expressed by the more senior teachers. The number of references of the less senior teachers was negligible in this respect. Accountability, for instance, was related by the newer teachers only with an extrinsic connotation. No apparent differences were noted with regard to *school atmosphere* and to *school administration*.

As far as differences between the perceptions of urban and *kibbutz* teachers are concerned, only a slight tendency in the realm of sources of feedback was observed. Urban teachers mentioned extrinsic sources of feedback as constituting their professional environment to a larger extent as compared to the *kibbutz* teachers.

Discussion

The discussion will revolve around two axes. One will relate to specific results of the present study, and the other to these results in comparison with the more general conception of teachers' environment.

As far as the present results are concerned, it is interesting to note, although not entirely surprising, that teachers perceive general societal and cultural characteristis such as politics, contemporary art and science as constituting their professional environment. This perception should be considered in planning professional development programs and be used constructively for growth purposes.

The emergence of the extrinsic aspects as constituting the major part of the professional characteristics might have been expected in the context of environment, however, the emergence of feedback as an important element was not expected. Feedback is a major component of learning. This is now an accepted fact which no one would dispute, but that it is also an important constituent of environment in teachers' minds is not self evident. It emphasises the extent to which it is so vital in their professional life. The importance attached to feedback in relation to environment, as concluded from the relatively high frequency of this category, may well arise from the need for accountability, the next most mentioned category. The latter is not only a major characteristic of any profession; it is also a societal demand, which is frequently discussed by educational and political authorities.

The proportion of the extrinsic vs. the intrinsic aspects of accountability may be a result of the one or more of several reasons: strong social environmental demands; the perception of accountability as an important constituent of professionalism; an extrinsic locus of control; a school norm. Each of these may account for this finding, and each may serve as a variable to be investigated in relation to the teachers' perception of their environment.

The differences between the relatively new and more senior teachers may be interpreted as following a developmental pattern. While the new teachers are usually in stages of worrying about their professional survival, or of envirnoment competency building, the senior teachers, presumably have completed these stages. They are more free to widen perspectives (Fessler, 1984). Accordingly, the new teachers may be more preoccupied with external environmental features which may influence their career, as compared to their more senior colleagues.

The policy of *kibbutz* schools, which rests on teachers' independence, intrinsic motivation and self directed growth, is reflected in the fact that these teachers did not mention external sources of feedback to the degree that their urban colleagues did.

In comparing teachers' perceptions of their environment to the description of this concept in the literature, several remarks are in order.

Professional environment as here conceptualised by the interviewed teachers differs in some respects from the meanings attributed to the concept of environment in its various versions in educological studies. Starting with common features, however, *school atmosphere* and *administration* are mentioned in most instances as major elements. In fact, no instance was encountered in which these two elements were not present.

However, in the present study, the relevant others -- principal, supervisor, peers -- appear in connection with feedback. They are treated in other studies as major elements of the school atmosphere -- whether it is supportive and encouraging, or rather restrictive and dominant.

The *professional* and *general* categories which emerged in this study may parallel the *inner* and *outer* circles suggested by Griffin and mentioned earlier.

Subject matter does not appear as an element of environment in other studies. Its emergence raises the question of how and why do teachers connect it with professional environment. Are the access to materials and their quality the distinguishing attributes which create an environment element? Is the curriculum content perceived as such? Do the values inherent in the content of subject matter create for some teachers an environmental source of thought and actions? The answers to these and similar questions have further to be sought.

In summary, it appears that along with some commonalities which reside in the concept of environment in the various usages of terms suggested in the literature, some idiosyncracies which reside in the *perceptions* of the teachers as individuals and as groups in specific environments are apparent. In studies in which relationships between teacher environment and other variables are sought, the revisitation and re-investigation of the varying meanings attached to teacher environment are strongly recommended.

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A Philosophical Educology: Education and Dialectics of Person

George S. Maccia
Indiana University
Bloomington, Indiana, USA

ABSTRACT

The dialectical method of analysis made its first appearance in American educological theory through the work and writings of William T. Harris. Harris' generic interpretation of the dialectical method directed educological theory and educational practice to achieve insight through the combinational complexities of conscious participation in the family, the society, the state and the church. An effect of Harris' dialectical method in American educology was to place the concept of self-development through self-activity at the core of discourse about instructional method and content, a concept which John Dewey embraced and extended.

John Dewey substituted function (consequences of action) for Hegelian dialectic, but he retained both Hegel's progressivism and historicity, i.e. that world history is the record of progress in the consciousness of freedom. The dynamics for event making in Dewey's theory was development toward the free society through the free involvement of persons. With Hegel, Dewey held that educational growth was synonymous with social growth. Individual freedom is social freedom.

The Marxian interpretation of dialectical process has been used both to characterise events in American education and to explain them. One essential difference between dialectical combinations set forth by Harris and dialectical transactions set forth by Dewey and dialectical materialism presented by Marx is that between social being and human consciousness. Harris and Dewey understood social reality as a consequent of human consciousness. For them, social existence was a human construction. For Marx, human existence was a social construction. Like Hegel, Dewey held that thought made history. For him the primary function of education was to develop reflective thinking, i.e. the active experimental quest for functioning principles working to produce social reform and, through that, individual freedom. Although Dewey's educological theories continue to influence research in educology, it is Harris' conservative combinations, the corporate society, that shapes educational practice.

Studies in historical educology and the educology of society utilising "conflict methodology" have exposed the extent of corporate combinations and the depth of their influence in educational affairs. In each, the educational process has been characterised as an instrument of the capitalist society. Yet it is becoming clear that such revisions of the utopian interpretations of the role of schools in America seemed to have missed the

significance and the radical effects the new information processing has had both on the means of production and the role of schools in social being. What emerges from that chain of schools is a new social class, the informer.

The informer is the one who can tell, who can give shape to character and to events. The informer does not produce products nor run production lines. The informer provides services both to authorities and subjects, to capitalist and proletariat, to influentials and functionaries. The informer is the educated person. The informer is becoming the new worker skilled in information, and the informer is becoming a necessity both in capitalist and socialist production. Like the multi-national corporations such informers serve, they transcend political and economic status.

This new proletariat is caught in a contradiction of social being. The worker wears a white collar. American middle class workers, who for the most represent the third generation of immigrants from Europe, no longer suffer extreme deprivations in material well-being. They struggle to be cultured. For them culture means the dignity and prestige of persons who are "educated," i.e. who received learning in the established educational institutions. Their crisis is a crisis in meaning, not of wealth. For an understanding of this crisis and of the contradiction of respect without dignity, the researcher must view educational processes as human making as well as human exploiting.

Introduction

The dialectical method of analysis is no stranger in American educological theory. Its first appearance in the educational scene was through the work and writings of William T. Harris during the second half of the 19th century. Harris used Hegel's principle of the concrete universal for his analysis of education. In his interpretation the essential attributes of Universal Reason was that of a self-active and self-actuating personality who expressed self both as a universal and a particular. For Harris,

> self-activity or self-determining is presupposed by all dependent being and even by time and space themselves as well as by all their contents. [Letter to Jules Ward Howe, as quoted in Thayer, 1965: 165]

Through the struggle for reason over will, human nature is realised. That realisation came through identification with society and its institutions. The dialectical process in this human making struggle up from savagery to reason was combination. He wrote

> It is through combination of man with man that the individual is able to achieve a rational existence. By combination each one is able to participate in the life of every other, forming a vast organism of institutions called human society, wherein each help all and all help each. [Harris, 1898: 257]

In his work, *Psychological Foundations of Education*, Harris laid down an educological principle still controlling educological theory and educational practice in America, i.e.

> *a human is made not born, and that formed human is a social being. Consciousness and will are links in a chain of social evolution. Reason directing will results in the progressive development of Human Being.*

Stages of Dialectical Combination

Harris characterised dialectical combination as follows:

1. The first stage in the dialectic is the characterisation of experience as discrete, non-dynamic, independent, individual entities. This is the stage of common sense.

   > Common sense assumes that experience has before it a world of complete individual things which either are or are not, and do not exist in a state of becoming or change, nor depend essentially upon one another. [Harris, 1898: 257]

2. The second stage of thinking characterises experience as relations, as forces and processes. These forces and processes are called "'abstract ideas' because they are negative and cannot be seen by the senses" (Harris, 1898: 211). Furthermore, the forces and processes have

   > more reality than the "things" of sense perception, the force is more real than the thing, because it outlasts a thing, it causes it to originate, to change, and to disappear. [Harris, 1898: 211]

   The conjunction of the first and second stages of thinking places things in relation; becoming is joined with being. The new thesis arises from the conflict between common sense and the initial judgement which marks the second stage of understanding.

   The combination of first and second stages of thinking is the thesis confronted in the third stage.

3. The third stage of thinking reduces the transient, "many forces" into a "concrete idea," the persistent force. As persistent force, thinking gives rise to all existence. Having nothing but itself to act upon, persistent force causes all origins, all changes, all disappearances. Out of the notion of persistent force emerge particular forces -- heat, light, electricity and the like.

   Realisation of persistent force as self-determined, i.e. acting only upon itself leads to the fourth stage of thinking.

4. The fourth stage of thinking locates the necessity of the principle of personal being -- the person, absolute force and immortal, for a persistent force could only be self-determining by being self-conscious. Hence in the fourth stage of thinking the thesis of personality as the true force of existence emerges.

For Harris,

> These four forms of thinking correspond to four views of the world: (a) as congeries of independent things; (2) as a play of forces; (3) as the evanescent appearance of a negative essential power; (4) as the creation of a Personal Creator, who makes it the theater [sic] of the development of conscious beings in His image. Each step upward arrives at a more adequate idea of the true reality. Force is more real than thing; persistent force than particular forces; absolute Person is more real than the force or forces which He creates. [Harris, 1898: 227]

Harris' generic interpretation of the dialectical method directed educological theory and educational practice to achieve insight through the combinational complexities of conscious participation in the family, the society, the state and the church. That insight finds in the established institutions the principle of Absolute Person. And in that principle the world's institutions function harmoniously.

Effects of Harris' Dialectical Method

An effect of Harris' dialectical in American educology was to place the concept of self-development through self-activity at the core of discourse about instructional method and content. Individuals through education were to form themselves as masters of their own destiney, as event makers rather than as instruments of events. For Harris, human beings selected environment; human beings were not selected by it. The pervasiveness of this dialectic attitute in American educology, for example, is readily discernable in the writings addressing these claims in B.F. Skinner's book *Beyond Freedom and Dignity* (1971).

The spirit of Harris' criticisms remain.

> The analogy of the lower order of being does not sufficie to explain the higher order of being. The scale must be inverted before the human can be understood. [Harris as quoted in Thayer (1965: 163)]

Although John Dewey substituted function (consequences of action) for Hegelian dialectic, he retained both Hegel's historicity, i.e. that world history is the record of progress in the consciousness of freedom and progressivism. The dynamicss for event making in Dewey's theory was development toward the free society through the free involvement of persons. With Hegel, Dewey held that educational growth was synonymous with social growth. Individual freedom is social freedom.

Through John Dewey, the Hegelian dialectic took the form of transactional resolution of social problems. Characteristically, Dewey located assumptions in arguments or traditions which set up false dichotomies. After identifying a dichotomy, he sought to show that the gaps of kind were in reality differences of degree. Essentially, Dewey's transactional dialectic was the substitution of relations for Harris's entities.

Stages in Dewey's Transactional Resolution

The stages in Dewey's transactional resolution of opposing these were as follows. In exemplifying the stages I shall draw from "The Democratic Faith and Education" in *Problems of Men*, (1946:23-33).

1. *Locate in an earlier thought expected consequences of social actions*, e.g. (in 1904) it was expected that democratic processes would: eliminate war; increase knowledge and thus increase rational action; establish freedom and equality as the foundations of all governments; cause oppressive governmental action to wither away the powers of the political state; increase production through industrialization and eliminate poverty through raising the general standard of living.
2. *Locate in present events the disjunctive realities*, e.g. (in 1946) the anticipated consequences of democratic processes were shown to be false. There has been two world wars; there had been a rise and increase of totalitarian governments; there had been more government action and less freedom; and there had been greater

unemployment and more poverty.

3. *Identify the assumptions which led to the split,* e.g. the conception for democracy used in 1904 employed an assumption of natural process (Nature's Laws) rather than human process. The use of this assumption led to the omission of a premise that science and technology and politial processes are tranactions between humans and nature.
4. *By means of the omitted premise reconstruct the understanding so that events are defined and interpreted to unite theory of the democratic life with living in a democracy.*
5. *Lay out these conception reconstructions as the content of education,* e.g. raise practical and vocational subject matter to the level of liberal discipline by charging them with scientific understanding in relation to the potential social-moral applications they contain.

Dialectical Combinations and Dialectical Transactions vs. Dialectical Materialism

Recently, in American educology, the Marxian interpretation of dialectical process has been used both to characterise events in American educational institutions and to explain them. One essential difference between dialectical combinations set forth by Harris and dialectical transactions set forth by Dewey vs. dialectical materialism presented by Marx is the difference between social being and human consciousness. Harris and Dewey understood social reality as a consequent of human consciousness. For them, social existence was a human construction. For Marx, human existence was a social construction. As Marx put it:

> *It is not the consciousness of man that determines their being, but, on the contrary their social being that determines their consciousness.* [Italics added, Marx, 1955]

A second essential difference between these conceptions of the dialectical method is that of the role of history. With Hegel, Harris and Dewey saw events of world history as a record of development that provided an empirical conformation of their theoretical developments. It was always the events of history to be accounted for through thought. For Marx and Engels the development and inner coherence in history was not a conformance of thought to events through history, but historically determined epoch connecting thought. Since history makes events, true thought is thought corrected by the course of historical events. For Marx, historical explanation was nothing other than the course of history in abstract and theoretically consistent form. Since historical event is a relation not an entity, analysis treats of relations not things.

Every relation has two sides. Thus, the analysis begins by characterising each side of the simplest relation by itself. The analysis of each side leads to consideration of the interaction of both. Interaction between sides will expose contradictions of which there will be demands for solutions. The solutions identified in the ongoing interaction will reveal new relationships. Attached to the new relations will be sides in opposition. The demands for solution always will be found to be attachments of different values, use and exchange. The values in relation, *use value* and *exchange value*, are always attached to things and appear as things. From contradictions and solutions new relations, new use values and new exchange values emerge. Historical law determining the evolution of these values are economic laws and are manifested in the history and future of class struggle for material well being. History is not development of reason through which, "eternal truth, eternal right, equality based on Nature and the inalienable rights of man," shall be realised (Marx, 1955: 117). Marx said:

> We know today that this kingdom of reason was nothing more than the idealized kingdom of the bourgeosie, that this eternal Right found its realization in bourgeois justice; that this equality reduced itself to bourgeois equality before the law; that bourgeois property was proclaimed as one of the essential rights of man; and that the government of reason ... only could come into being as a democratic bourgeois republic. [Marx, 1955: 117]

There can be no doubt that William T. Harris held such a utopian stance. Indeed, he structured the schools in St. Louis, Missouri and set the course of teacher education to liberate the individual and to ameliorate societal ills by combining individual aspiration with those of corporate, political and marketing institutions. Such beliefs continue to dominate American educological theory and educational practice.

The same claim cannot be said of Dewey's view. John Dewey's transactional dialectics was to be a logic for a new social science. This new science was to be the outgrowth of active participation in the affairs of life. A genuine grappling with lived contradictions in the relations of values of social reality. Dewey's use and exchange values, however, were not economic value, they were rational ones. Like Hegel, Dewey held that thought made history. For him the primary function of education was to develop reflective thinking, i.e. the active experimental quest for functioning principles working to produce social reform and, through that, individual freedom. Although Dewey's educological theories continue to influence research in educology, it is Harris' conservative combinations, the corporate society, that shapes educational practice.

Corporate Combinations and Their Influence in Educational Affairs

Recent studies in historical educology and the educology of society utilising "conflict methodology" have exposed the extent of corporate combinations and the depth of their influence in educational affairs. In each, the educational process was characterised as an instrument of the capitalist society.

Clarence J. Karier examined the growth of a corporate, liberal state and its need for obedient, efficient works and consumers. He showed that much research in intelligence and aptitude testing was with an eye on the selection and education of workers. Karier quotes Lewis M. Terman in making that point clear:

> Preliminary investigations indicate that an I.Q. below 70 rarely permits anything better than unskilled labor [sic]; that the range from 70 to 80 is preeminently

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> that of semi-skilled labor, from 80 to 100 that of skilled or ordinary clerical labor; from 100 to 110 or 115 that of semi-professional pursuits; and that above all these are the grades of intelligence which permit one to enter the professions or the larger fields of business. Intelligence tests can tell us whether a child's natural brightness corresponds more nearly to the median of (1) the professional classes, (2) those in semi-professional pursuits, (3) ordinary skilled workers, (4) semi-skilled workers, or (5) unskilled laborers. This information will be of great value in planning education of a particular child and also in planning the differentiated curriculum here recommended. [Lewis M. Terman, *Intelligence Tests and School Reorganization* as quoted in Karier, 1972]

Most current Marxist analyses of American education find that schools were instruments of capitalist economics that functioned to provide a docile and able working force (cf. Katz, 1971; Karier, Spring and Violas, 1973; Lazerson, 1971; Kaestle, 1973; Tyack, 1974; Greer, 1973; Bowles and Gintis, 1975). The schools selected and trained the American industrial worker.

Yet it is becoming clear that such revisions of the utopian interpretations of the role of schools in America seemed to have missed the significance and the radical effects the new information processing has had both on the means of production and the role of schools in social being.

More and more schools look to their own functions and products. The levels of schools have increased both downward and upward. Preschoolers are given a "head-start" for grade-schoolers [primary school]. Grade-schoolers are expected, virtually compelled, to go on to become high-schoolers [secondary school] and high-schoolers drawn by the promise of increased economic well-being are wooed into junior colleges [American post-secondary institutions] and from them into the universities. What emerges from that chain of schools is a new social class, the informer.

The informer is the one who can tell, who can give shape to character and to events. The informer does not produce products nor run production lines. The informer provides services both to authorities and subjects, to capitalist and proletariat, to influentials and functionaries. The informer is the educated person.

Contradictions in the Use of Educational Institutions for Social Control and Economic Efficiency

It is evident that educational institutions were, at least in the U.S.A., designed to develop social control and economic efficiency. It is also evident that a contradiction results when educational institutions are used for such purposes. Neither a church or factory requires an educated congretation or work force. There can be no doubt that schools set meaning. They fix catechetical belief, or attitudes toward work and state. But schools do more. They increase opinion. Such increase occurs despite controls designed to prevent it.

For example, in the years just preceding the founding of Harvard College in 1637, the General Board, the authorities of Massachusetts Bay Colony, were concerned that with the move from "Old Town" to Boston, "Old Town" would go out of existence. Without an assured source of income, no person could be induced to remain in or immigrate to "old Town." They found a solution in Harvard College. They located the school at "Old Town" and gave the town a new name, Cambridge. Harvard College was one of many educational institutions founded in part to serve economic interests (see James, 1910).

Of equal concern was the effect of the "Act of Toleration" in Great Britain. The authorities at Boston were doubtful of the orthodoxy of any ministers receiving their education in English universities. Also they worried over the religious effects of the increasing geographical dispersion of church membership. The solution was to charter Harvard College under the control of an external "Board of Overseers." The Board was charged to "halt the increase of opinion in the Colonies" (Morison, 1937). To this day, college and university boards of control, whether representing a church, a state or business interests, have not been able to control the increase of opinion in educational institutions.

Out of that increase grows an educated class, a focus of prestige, and a source of alienation for the uneducated. This focus increases as the worker moves from the machine to the computer. The new worker skilled in information is bedoming a necessity both in capitalist and socialist production. Like the multi-national corporations such informers serve, they transcend political and economic status. This new proletariat is caught in a contradiction of social being. The worker wears a white collar. That contradiction has been observed. It lies in the outlook of the middle class worker who is neither capitalist nor proletariat.

Richard Sennett in *The Hidden Injuries of Class* described this new contradiction. American middle class workers, who for the most represent the third generation of immigrants from Europe, no longer suffer extreme deprivations in material well-being. They struggle to be cultured. For them culture means the dignity and prestige of persons who are "educated," i.e. who received learning in the established educational institutions. Their crisis is a crisis in meaning, not of wealth.

Sennett tells of a worker who moved from boot black to meat cutter to processor of loan applications in a bank. He was a success, proud of his worker heritage, disdainful of his college degreed associates, yet also proud that he had "made it." But, in his eyes, he had made it without the proper credentials. He was a fraud. He gained respect (he had attained a position held by the educated) but in doing so he lost his dignity. He no longer respected himself. He worked among those who were educated, who had the words and the assuracne of being right. Through their "culture," the educated attained the power to sit in judgement. Educated persons controlled information and thus had weapons of self never realised by a person who left school at sixteen. In other words, he was doing work for which he had no right. Under the circumstances of having made it undeservedly, he became alienated against himself as well as with his associates. He could not accept the material well-being of the educated person without that person's culture. Since he was not one of the educated, he did not have their power to inform. He was without dignity (Sennett, 1973).

Sennett tells more such tales in which the new use value is dignity and the new exchange value is respect. He tells of those who have freedom, from material want, but have no sense of control of their own destiny. They are without the social being for which they are respected. The have no freedom to become.

For an understanding of the contradiction of respect without dignity, the researcher must view educational processes as human making as well as human exploiting. It is toward that understanding that I now turn my attention.

Educational Processes as Human Making

The reality of the person, as Marx saw it, begins in social being. It is a being or complex of factors in interrelation. Because factors are in relation, they are constrained and developed in the context of the whole. Personality is not combination, it configuration. Harris' argument that human development was asystematic union of habits, skills, understandings and values built up gradually through sequences of small changes within the capitalist society failed to consider the self-destructive mechanisms in any society where increasing production of economic surplus is necessary for survival. Harris also failed to realise that analysis of things apart from their concrete relationships does not inform of the living whole, but of mechanisms required in an ideal whole.

Whatever human cognitive experience is, even in the infant, it is complex. It is not a set of discriminations built up gradually through maturation and care. It is not a booming, buzzing confusion of sensations to be ordered out and regularised through acculturation. The experience of an infant is classificatory. It is of stable and recurring patterns of parent-infant and infant-thing interractions. Always these patterns are of the infant. They are not abstract and external to him. The infant's performative experience is not passive reception of behavioural responses elaborated from primordial reflexes, nor is it random activity selectively shaped by environmental necessity. The infants performative experience is constructive. There appears to be an innate capacity for tool using and tool making that Martin Buber called, "the constructive instinct."

Infants labour to use culture through classification and performance. From the outset, visual response of infants is complex. Its visual system has two aspects: discriminating and searching. Discriminating includes focusing, refining and exercising identity sensitivity. Searching includes exercising sensitivity to ambience, location and movement.

The visual factors out reach the motor ones and provide visual information beyond the capacity for performance. There are no simple processes hierarchically developed in the nervous system. Within one or the other, classification and performative processes, they form each other.

The precision of the visual processes in the very young infant accompanies an imprecision of the motor processes. As the performative process becomes more precise through visual and motor interaction, the degrees of freedom of action decrease. Yet, in the course of development, tools come into use -- an event possible only in conjunction with precise classification associated with visual perception. Such joint employment and differentiation of sensory factors suggest that information processing and motor control are complexes to be analysed in relation rather than independently. Jerome Bruner stated the matter as follows:

> Indeed, before the third month of life, there is ample indication that the activity of sucking not only serves innately predetermined multiple functions -- nutrition, pain reduction, and exploration -- but that it can also be diverted to arbitrary and intelligent instrumental activity that could not possibly have been preordained by evolution. [Bruner, 1968: 24].

One further observation on infant cognitive development will be made in order to place the making of a person in dialectical perspective. Following the work of N. Berstein (1967), Jerome Bruner noted that mastery of intelligent, visually guided activity involves a brute restriction of movement. The degrees of freedom (possibilities for movement) are selected and the skill developed within that restriction of possibilities for action. Higher skills are gradually consolidated within the restrictions set. Clearly, the beginning of intelligent action is in reducing the possiblities for action. Other possibilities for action must be annihilated. Cognitive development is not a gradual hierarchical combination of simple routines. That development is not a consolidation, but a development of new relations through new strategies that rule out some actions while favouring others. The activity of annihilation and construction makes order out of disorder, and certainty out of uncertainty. Learning is the constructive endeavours of a whole that reduces confusion and disorder, i.e. decreases entropy.

My shift from psychological language to systems language introduces the conception of a person as an organismic system that is not only self maintaining but self enhancing. The person, for purposes of analysis, is viewed as a learning system actively engaged in ordering the quality of life.

Systems Theory and Human Making

The trouble with characterising an organismic system is that it is taken as a whole. Complexes of interactions must be seen in relation to each other within the unifying context that contains them. A further difficulty comes in locating qualities rather than magnitudes. To cope with such difficulties, Elizabeth Steiner and I developed the SIGGS Theory Model (1966). As a consequence of that development we produced a typology of systems. It is through the perspective of that theory that I shall suggest essential conditions for the dialectics of person.

If systems theory is to be useful in understanding and constructing systems that enhance life, it must be characterised so that it includes systems whose activity is directed toward an envisioned future. Systems directed toward an envisioned future are proactive. To distinguish proactive systems from reactive ones, possibilities of entropy generation as system effect shall be considered. In this analysis, *entropy* is taken to mean uncertainty or information from a selective point of view. Through shifting the meaning of *entropy* from its physical context to a communication one, the social being of humans as learning systems also can be discussed. Based upon possibilities of information generation, four kinds of systems can be discerned: those having no uncertainty; those increasing uncertainty; those maintaining uncertainty; and those decreasing uncertainty.

A system of zero uncertainty would be complete. It would be all of everything, e.g. all knowing. Hence it is obvious that such a system is optimally enhanced. It is equally obvious that such a system is beyond human experience. Some therefore call it *God*.

Systems which increase uncertainty are the closed systems described in classical thermodynamics or the non-regulatory open systems. Capitalism is such a system. The production of surplus leads increasingly to depletion of resources and exploitation of the means of production. These systems are self-destructive in that their order decreases until there are no more inter-relations of parts. In time all such systems fall apart and no longer exist. All self-destructive systems are systems out of control, i.e. caught up in invariant courses of action. Like the behaviour of a runaway horse or a frantic person, an uncertainty increasing system cannot enhance, only destruct.

An uncertainty maintaining system is an open system which is in steady state. It does not adapt to changes in environment. It maintains stability. Environmental effects are resisted so that uncertainty is neither increased nor decreased. The system's quality is preserved, not enhanced. This quality is subject to conditions of rise and fall. At times when environmental resources are abundant, a quality of life can be maintained and distributed throughout the system. An affluent society is established. Distribution and maintenance in these systems are at the expense of environmental resources. When these resources are decreasing or drastically altered, uncertainty must increase, and the system self destructs. Sky Lab is a cogent example of both the rigidity and vulnerability of self-maintaining systems. When the effective resources of the environment became inoperative, Sky Lab fell. Destructing systems can become parts of non-destructing systems. If they are not functional within the new, they become out of fashion, archaic and finally have no use value.

A system which is uncertainty reducing anticipates and plans. It forecasts action, hence, it is proactive. Proactive systems are the only ones that increase regularity, i.e. decrease the number of degrees of freedom in an activity. In order to focus attention to the increasing regularity of these systems, we term them *self-constructive* or *constructing*. These systems are foreseeing and so can adjust the environment proactively. Their changes are characterised by mutuality and, hence, are not subject to fall due to environmental depletion.

Clearly, a system which is constructing is one that is neither merely physical nor mechanical, for foreseeing depends on purposiveness. Purposiveness entails actors as well as actions. Behavioural systems, consequently, are the only systems that can be self-constructive. Those behavioural systems that are constructing are learning, for changes in behaviour that persist or grow constitute learning. When humans learn, the behavioural system is a social system.

Any description of human learning that is adequate is not of an individual but of a relation between persons. That relation is tutorial. The educative process is one in which someone is attempting to bring about learning. Hence a teacher as well as a learner are opposites in the relation called an *educative* one.

In the analysis, a teacher subsystem and a learner subsystem must be identified in their relations. A characteristic of an educative system is its purposiveness. A teacher is deliberate in teaching, and a learner tries to learn. The learner as well as the teacher, intends behavioural growth.

In a training system, the learner subsystem is not so characterised. A typical training system would be one designed to teach dogs. The teacher in this system intends the dogs to develop obedient behaviour, but the dogs cannot so intend. They cannot be said to try to learn. In certain circumstances, one could say that they try to please the teacher and so learn. Training systems including human subsystems are destructive. Without mutuality of intention, alienation rather than tuition is the relation. From the accounts of American education herein cited it is evident that the American schools do not enhance the learners. They sow alienation among them.

Attending to teacher and learner subsystems within education and also to the kinds of systems, sixteen possible combinations can be sorted out, and only one of these enhances the quality of life for both the teacher and the learner. Schema 1 presents the possible combinations.

Schema 1: Combinations of Kinds of Teacher and Learner Systems

Teacher	Learner			
	A	B	C	D
a	aA	aB	aC	aD
b	bA	bB	bC	bD
c	cA	cB	cC	cD
d	dA	dB	dC	dD

a and A stand for complete system
b and B stand for constructing system
c and C stand for maintaining system
d and D stand for destructing system

We need not consider any of the seven cases (aA, bA, cA, dA, aB, aC, aD) in which either the teacher or learner subsystem is complete. Complete systems are beyond experience. A further reason why we need not consider the cases where the learner subsystem is complete (aA, bA, cA, dA) is the condition of being a learner. Learner subsystem are necessarily incomplete, for they are trying to grow behaviourally.

The cases in which the learner subsystem is either maintaining (bC, cC,dC) or destructing (bD, cD, dD) clearly are not ones in which the quality of a learner's life is enhanced. The learner irrespective of trying to learn, simply hangs on or worse, goes down hill. The learner is alienated against her or his person, for the goals of the learner cannot be realised. Through such failure emerges loss of dignity and self respect. Unfortunately, public schools in the U.S.A. are self-maintaining instruments of corporate and political power. Learners who are viewed as "manpower" are placed in learning situations designed to maintain that workforce. Under such self-destructive learning, there is no dignity even when material well-being has been realised.

Those cases in which the learner subsystem is constructing (bB, cB, dB) do enhance the quality of a learner's life. The learner is learning what she or he is trying to learn. As the learner moves from uncertainty to certainty, order increases and behavioural growth occurs. Obviously, only in the case of bB is the teacher's life also enhanced. Such is the condition of complete mutuality (the union of opposites).

In those cases in which the teacher subsystem is constructing (bB, bC, bD), the teacher's life is enhanced. To achieve mutuality, however, the teacher must be a learner as well as a teacher. Only the first case (bB) is fitting.

In order that teachers be learners as well as teachers, more is required than relating to the learners whom they teach. Learners cannot teach their teachers or they would not be teaching. In the dialectics of education a teacher must be a persistent contructive force. In order to be a constructive force, a teacher must constantly be becoming the best of culture. In the fullest sense of the word, the teacher must inform the learner.

Given both learner and teacher subsystems which are self-constructive and so enhancing the quality of life, education is a dialectical teacher-learner system realising the educated human being. Through the constructive teacher (one who is growing behaviourally), the curriculum is the relation which brings the learner to the best of culture. Thus, the learner too grows behaviourally. She or he becomes the truly educated person. She or he becomes a person demanded by the course of history, the concrete reality of a social whole. As a member of the Amalgamated Clothing Workers Union said it:

> True education will show the workers that present conditions are no accident and that the labor organization has an ultimate purpose -- the emanciaption of labor from the commodity and wages status -- which is not affected by the ups and downs in the daily skirmishes of the class struggle. That brings us clearly to the issue of the transition of society from the old order to the new. [Schlossberg, 1921: 73-74]

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An Educology of Poverty: The Impact of Non-Urban Poverty on American Education

Arthur Aikman
Southern Illinois University
Carbondale, Illinois, USA

ABSTRACT

As the USA enters the final decade of the Twentieth Century, Americans are unpleasantly reminded of the plight of the poor in their society and of the implications of poverty for succeeding generations of American children. The impact of poverty is even greater in rural areas than in urban, but ironically this fact is often overlooked in the reports on poverty, the programs to alleviate poverty and the allocation of monies to assist the poor. The release of the Lower Mississippi Delta Development Commission report confirms that, rather than being ameliorated, poverty within rural areas is becoming more extensive. The effects of rural poverty upon (1) children's attitudes towards school and (2) their performance within school often defeats the intent of educational programs to equip children with skills and attitudes to break out of the cycle of poverty which entraps them. An imperative challenge for American educologists and educators is to rethink and redesign educational programs in close liaison with other policies (economic, social) so that they are effective in enabling children, youth and young adults to overcome the handicaps imposed upon them by their environment of rural poverty.

Introduction

As the USA enters the final decade of the Twentieth Century, Americans are unpleasantly reminded of the plight of the poor in American society and of the implications of poverty for succeeding generations of American children. A recent *Kappan* special report dramatically delivered this message. However the rural poor, subject to the increasingly debilitating effects of poverty, are often overlooked (Reid and Sautter, 1990, K1-K12).

With the release of the report of the Lower Mississippi Delta Development Commission in 1990 (*Delta Initiative*, 1990), American's sensitivity has again been shocked through the identification of yet another area of rural poverty including parts of seven states stretching from southern Illinois to the Gulf of Mexico.

> Take almost any national measure of misery -- poverty, teenage pregnancy, infant mortality, sub-standard housing -- and it is worse here. [*Chicago Tribune*, May

> 20, 1990]
>
> Per capita income in the 219 counties and parishes examined in the study averaged $8,224 in 1985 ... or two thirds the national average. Three fourths of the region's work force lack basic skills. Rural areas get by with 81 physicians for each 10,000 people, less than half the national average. One half of the rental housing units in the region were found to be "dilapidated beyond repair." Of the 1.38 million homes that are owner occupied, one third had a value of less than $5,000. [*Delta Initiatives*, 1990]

During the 1960's, much attention was given in the literature and the news media to the plight of the disadvantaged in this country. Since that time, there has been decreased attention to this area and even less interest has been shown in the rural disadvantaged since urban problems have often demanded our interests.

During the mid 60's one third of all rural Americans lived at the poverty level. They comprised 46 percent of all impoverished Americans. Estimates placed the number of rural poor at 16 million.

Profile of Rural Poverty

The effect of poverty upon youth is more debilitating in rural areas than urban. According to Walter G. Daniel (Daniel, 1964:218-224) some of the differences in background of urban and rural disadvantaged youth are as follows.

1. Education of rural parents is lower.
2. Family income is lower in rural areas.
3. The isolation of rural areas leads to lack of cultural stimulation and lack of regulation and order.
4. The decline of population in rural areas adversely affects welfare services and social, economic and educational opportunities.
5. Marriage usually occurs at an earlier age in rural areas.

Events of recent years, including a decline in American federal and state programs designed to meet needs of rural disadvantaged, have had a further eroding effect on these types of services.

The disadvantaged rural child often lives in substandard housing which is rundown and perhaps in need of paint for many years. Plumbing may consist of a well in the backyard. Toilet facilities may be an outhouse.

The disadvantaged rural child may reside in a small community or village which is rather stable in its social structure. Class differences are often very apparent in this kind of environment. The father may not reside at home. The child may live with grandparents or other relatives while the mother seeks work or is employed in a nearby metropolitan area. The best meal of the day for the disadvantaged rural youth may be the hot lunch at school if the child is fortunate enough to be able to get one. The child's clothes are not as good as those of other children.

The composite result of the multiple handicaps under which the disadvantaged rural child operates often cause the child not to relate well to others. The teacher may not really understand such children because their values are different and are often in conflict with those of middle class youngsters. The disadvantaged child may tend to see authority figures as enemies rather than as friends. The child may seek pleasure in different ways, when and where it is to be found. Enjoyment can not be postponed; tomorrow will be like today, only worse. These factors relate to poor self concept, inability to postpone self gratification, lack of long range goals, and low aspiration levels of disadvantage children (Aikman, 1965).

Poverty knows no age limits or racial or geographic bounds. Rural poverty may be due to the closing of factories or to a decline in the economic advantages of river traffic in a certain area. It may exist, and often does, among migratory groups of farm labourers, in areas where farm land is simply not rich enough or where erosion has torn away the productivity of the land, in the rural village where there are increasingly fewer opportunities for employment due to a declining population. Poverty may exist because the family farm, rural communities and the entire rural economy can no longer provide income to maintain above-poverty level lifestyles. Whatever the reason, it exists.

The disadvantaged child in a rural setting may even have a different set of communication symbols and therefore may not communicate well with those from a middle class environment. The child's handicaps grow during the school years, which often leads to the decision to drop out of school (Englebright, 1965).

This is the child's life in the small towns, rural villages or ancient farm homes of another era. In this scenic land of gently flowing rivers and streams, majestic mountains, wooded pastures and prairie farm lands, poverty exists, though it is sometimes almost invisible. The tourist can not observe rural poverty from the interstate, the cloverleaf, the freeway, the overpass or the toll road.

The Challenge

The USA is faced with the problem of educating unprecedented numbers of young people who represent economically, educationally and culturally disadvantaged backgrounds. They enter school with environmental and cultural handicaps which limit their abilities to participate effectively in the learning experiences available to them. They are commonly evaluated with instruments which measure aspects of a culture which is alien to them.

Many authors in the 1960s, for example Harrington (1962), wrote in almost poetic language of the plight of citizens in Appalachia, where the third generation of welfare recipients survived only with the help of welfare checks, social security and aid to dependent children. The school dropout rate [withdrawal rate or wastage rate] was high, as was infant mortality. The best of the resources, including human resources, flowed to the coal fires and mills of the north.

Not surprisingly, the rural poor suffer higher mortalities for infectious and preventable diseases and injuries (Roemer, 1976).

> The reason for the rural health problems lie partially with the basic social and economic characteristics of rural areas:
>
> - Rural people suffer from the "costs of space." They are relatively few and widely dispersed; therefore, more difficult and costly to serve.
> - The rural tax is low, both because the population is sparse and because of lower per capita income.

- Local rural government is fragmented into small and inefficient units, that are generally conservative and resistant to change.
- Rural people are less visiable, less vocal, and less sophisticated than their urban counterparts in learning about the applying for assistance even though they are in no less need. [Henderson, 1978]

In speaking of the generally bleak housing picture in the USA, the *San Diego Union* in its January 5, 1975 issue stated:

> Worst of all is the housing picture in rural areas, a subject seldom discussed. The sad truth is that 11.5 million rural Americans live in sub-standard housing.
>
> One family in four in Appalachia must walk through the cold to an outdoor privy. Almost 45% of the nation's poor families reside in rural areas. Most severely affected by substandard rural housing are blacks in the deep south, Indians, migrant farmers, senior citizens and, of course, the Appalachian poor.
>
> Most people think the worst housing in America is located in city ghettos. Not true. The incidence of inadequate housing outside metropolitan areas is roughly 3.5 times what it is within the cities.
>
> The statistics of substandard housing in rural America are so staggering they defy the mind's limits to picture them.

It is horrible to consider that the number of rural citizens living in sub-standard housing in this country is equivalent to the total population of the state of Pennsylvania.

A recent report dealing with sheltering the poor in rural America states that while government guidelines suggest families should spend no more than 30% of income on housing, including utilities, two in five families below the poverty line spend more than half of their meager income on housing, and one in four spend more than 70%.

The following statement speaks to the problems of children of a particular segment of the rural poor:

> The migrant lifestyle allows little continuity in the education of the children of farmworkers. Spanish is the primary lanaguage spoken in the fields, and dependence on crew leaders makes learning English unnecessary. Thus children of farmworkers are likely to follow the past of the parents rather than face the almost insurmountable barriers that prevent them from taking advantage of opportunities open to the Engish-speaking and educated. [Munoz and Alvarado, 1975:1]

A study dealing with social isolation and cognitive development, while not done in an American setting, suggests that without exposure to communications the child will fail to show normal cognitive growth. The relative isolation of rural children leads to decreased verbal and peer interaction (Hollos and Cowan, 1973:630-641). This factor when coupled with the other debilitating effects of poverty upon the lives of children further compounds their problems, both in educational and noneducational settings.

Poverty may be in the process, for a number of reasons, of becoming more a female problem.

> The father has largely disappeared from the portrait of the poor family in the 1960's. In the last 15 years America's poor and nearpoor have been increasingly women and children who depend for their support on women -- a phenomenon that

> might be called the feminization of poverty. [Dumanoski, 1981:1,4]

American census information (1980) confirmed the trend which showed in the early 1970's. The trend which showed in the early 1970's was that the years of school completed by persons 25 years and over is greater (in each age group: 25-44 and 45 and over) in metropolitan than nonmetropolitan areas in both farm and nonfarm rural populations. Thus the educational level of nonurban populations continues to be lower than that of urban populations (U.S. Bureau of Census, 1974).

The low birth weights of babies, common in families earning less than US $10 thousand a year, relate to later problems in learning for children. Giving birth to children of low birth weight appears to continue to be true of women in poverty, even as they are escaping poverty levels, suggesting that "Poverty's effects may linger for years" (*Southern Illinoisian*, 1990, June 5, p. 6).

The "National Study Regarding At Risk Students" conducted in 1989 and quoted in an article in the *Southern Illinoisian* reported that rural children are more likely to face failure because of crime, substance abuse, parental neglect, or other factors, than city or suburban children (*Southern Illinoisian*, 1990, May 23, p. 5).

After analysing family lifestyles relative to children's school achievement, a recent study concluded that children whose families had a history of psychologically devastating experiences and many social and economic problems were not motivated by teachers, had poor quality experience in kindergarten through 12th grade, had poor self concepts and were scarred by their life experiences (Clark, 1983).

While David Kerns (*Kappan*, 1988:565-572) listed a six point plan which would certainly assist in solving the problems, he did not give adequate attention to the impact of poverty on the child, especially in a nonurban setting. The evidence relative to the negative impact of poverty upon the educational success of poor children seems overwhelming.

Data from the US 1990 Census are becoming available, and they will shed more light upon our current problems. Even now some trends are already apparent. Among these are a slower rate of population growth, a loss of population in the Midwest and Northeast, a migration of population to the West and the "Sun Coast," and vast changes in age structure, family life and the labour force.

Efforts begun in 1987 and 1988 in the form of rural regeneration programs may have come too late for some generations of children whose parents lost family farms, lost employment in small towns and rural areas where the economy has suffered the most and grew up with all the debilitating effects of rural poverty, but they may not come too late to save further generations of rural children.

Testimony presented to the Congress of the US in 1987 stated that

> The rural crisis has penetrated every sector of the rural economy and lifestyle from its schools to its health care services to the barbershop on Main Street.

Rural America in 1987 had 38% of the nation's needy and 67% of its substandard housing; the unemployment rate in rural areas was 9.2% compared to an urban rate of 7.2%.

These general descriptions of schoolchildren in the 1980's are startling:

14% are illegitimate;
40% will have lived with a single parent by age 18;
30% are latchkey children;
20% live in poverty;
15% speak a native language other than English;
15% have physical or mental handicaps;
20% have poorly educated parents (McLaughlin, 1987:157).

When compounded by the lack of adequate services and supports of the rural setting, they are a cause for greater concern.

As we enter the final decade of the 20th century, it is apparent that the government must provide technical help (water, sewage, health care, education). It must provide incentives for companies to locate in rural areas. It needs to foster rural development in a myriad of ways. It must redirect government loan programs to assist rural and farm families and small town business. It needs to assist with housing problems and to encourage research relative to rural problems. It needs to encourage universities to offer additional programs targeted at rural populations ranging from career options programs, to counseling, to community development, to assistance to small business, to expanded extension programs.

Without these kinds of innovative, creative, organised efforts to improve services and education and to revitalise the rural economy "much of rural America will continue to deteriorate into deeper levels of poverty, despair and decline," and the problems of the rural poor will continue to have increasingly debilitating effects upon the youth who grow to adulthood in these settings (*St Louis Post Dispatch*, 1987).

The data in the 1990 census indicate that the political power base of most of the depressed rural areas has further slipped. The biggest increases in population and representation have been in a few sunbelt states.

It is the responsibility of American educologists, educators and informed citizens to bring the tremendous need of children in rural poverty to the attention of government at all levels (federal, state, local) and to the private sector in order that a joint undertaking may be made of programs which can bring adequate employment, education, housing, health care and improved living standards to the families in rural America who suffer from the destructive effects of poverty. Only through herculean efforts can Americans begin to make a change and improve the lives of succeeding generations of their children yet to be born.

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Book Reviews

Teaching and Thinking about Curriculum: Critical Inquiries. **Edited by James T. Sears and J. Dan Marshall. Foreword by Nel Noddings. New York, NY: Teachers College Press, 1990. Pp. 306. Paper.**

Teaching and Thinking about Curriculum arose from a session of the 1986 annual meeting of the Association for Supervision and Curriculum Developent (ASCD) in the USA. The theme of the session was *teaching curriculum*. An unexpectedly large number of college and university lecturers attended the session. Virtually all had responsibilities to teach curriculum within a university or college program.

The organisers of the session, Dan Marshall and James Sears, were heartened by the support and enthusiasm of the attendees and sought to establish some means of on-going communication among teachers of curriculum. They considered the options such as a newsletter, a network of curriculum lecturers or a book.

They subsequently organised a session at the ASCD conference the following year (1987), this time under the sponsorship of the Curriculum Teachers Network. At the 1987 ASCD conference, they commenced negotiations with their publisher, Teacher College Press (TCP), with a view to publishing a book about the teaching of curriculum.

After receiving encouragement from the TCP editor, they contacted 300 lecturers of curriculum and invited submissions of abstracts for a book about contemporary teaching of curriculum. Forty-five made submissions. The editors, Sears and Marshall, selected ten reviewers to evaluate the submissions, and they selected twenty of the submissions. Commencing in the first half of 1988, Sears and Marshall met with the twenty contributors on several occasions and encouraged the authors to exchange drafts and share reviews.

The result of these efforts is *Teaching and Thinking about Curriclum*, a collection of essays by William Doll, Andrea Bowman, Nelson Haggerson, Ken Kantor, Janet Miller, George Wood, Landon Beyer, William Pink, Robert Donmoyer, Jean Erdman, Edmund Short, William Schubert, Paul Shaker and Craig Kridel. The fourteen essays are structured in relation to four themes: teaching the subject of curriculum within a university or college from the perspective of (1) self, (2) teacher, (3) community and (4) field. At the end of each of the four parts, the editors provide the reader with reactions to the contributors by O.L. Davis, Paul Klohr, Norm Overly, Ted Aoki, Maxine Greene and Michael Apple.

The origins of *Teaching and Thinking about Curriculum* helps the reader to come to terms with its style and organisation. It reads very much like what happens at sessions of the ASCD (and the conferences of other similar organisations). One needs a great deal of context (wide reading, wide acquaintances and the following of conversations at curriculum conferences over the years) to make sense out of what is said.

The editors' intention in this work is to provoke discussion about what concepts and questions are important to address and what approaches are appropriate to use in teaching about curriculum. Through the structure of the book, the editors suggest that the curriculum teacher has at least four points from which to begin to address these questions: (1) from the perspective of you yourself and your personal concerns and history; (2) from the perspective of school teachers; (3) from the perspective of wider concerns outside of the schools, within communities; (4) from the perspective of the accumulated literature about curriculum (the "field" as the editors and contributors like to call it).

In many ways, this book is a success. It contributes to the on-going discourse which takes place at curriculum conferences over the years about what curriculum is and how it should be taught. It contains a number of anecdotes and real-life examples of curriculum in action within school settings which should appeal to many readers. It presents the reader with a number of perspectives about curriculum which need to be appreciated in order to know the strengths and the inadequacies of discourse about curriculum.

On the other hand, the book suffers from a number of serious flaws. For example, in the Foreward, Nel Noddings introduces the reader to the book in this way:

> The book is about curriculum as a field of study and teaching. Through both explicit and implicit means, this volume suggests at once that curriculum and teaching are not easily separable and that a thinking, teaching self cannot be deftly plucked out of either teaching or curriculum and set aside. Curriculum is thoroughly mixed up in teaching, and teaching is inextricable from teachers. In some circles, such blurring of boundaries is either heresy or nonsense. Here it is a refined form of common sense and, further, its acceptance adds enormous fascination to the field of study. [p. ix]

As this excerpt from the Foreward indicates, there is a lot in this book which implies that clear unambiguous statements which can be subjected to the test of evidence are somehow inappropriate when it comes to writing about curriculum. Also a virtue is made out of conflating the language about people and things with the people and things themselves. As Nel Noddings says, "curriculum is thoroughly mixed up in teaching, and teaching is inextricable from teachers." This is a reiteration of the obvious truth that you can not take the conduct by a person out of the person. But you can certainly talk and write about the same persons, the same events, the same relationships with many different words, sentences and paragraphs, organised in relation to many different topics and explanatory principles. There is the conduct of people, and there are assertions about that conduct. There are functions, events and relationships; and there are statements about them.

This book would greatly benefit from consistently honouring the distinctions among (1) a set of phenomena which can be inquired about, (2) the activity of conducting inquiry about a set of phenomena, (3) the warranted assertions which are produced by the inquiry and (4) the activity of teaching and studying the warranted assertions. Instead, the book uses the term *field* to conflate all four concepts, and it makes a virtue of unrelated anecdotes, invalid classifications, insupportable inferences and disjointed reminiscence. As a clear-headed, fruitful and useful extension to the educology of curriculum, it is a failure.

Editors

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***Australian Teachers' Careers*. Edited by Rupert Maclean and Phillip McKenzie. Hawthorne, Victoria: Australian Council for Educational Research, 1991. Pp. 308. Paper.**

Australian Teachers' Careers is part of the Australian Council for Educational Research (ACER) series about teachers and teaching The first in the series was *Teachers' Professional Development* (Phillip Hughes ed 1991) The series is intended to complement the ongoing program of research conducted by the ACER into the work of teachers the education of teachers and the context of teaching [p iii)] The five major themes of the series are (1) the compulsory years of schooling. (2) beyond compulsory schooling. (3) cognitive processes and education. (4) education and technology and (5) teachers in Australian Society [p iv]

The editors identify three main purposes for their work They wish to extend contemporary factual information about teachers. to evaluate policy initiatives and to pique thought about additional initiatives

Contributors to the *Australian Teachers' Careers* are veterans in teacher education. school administration and/or research about Australian teachers They include (in addition to the editors) Gerald Burke David Campbell Don Christie Geoff Howse. Bob Meyenn. John Pederson. Shirley Sampson Terri Seddon Ron Sinclair Paul Smith. Andrew Spaull Don Squires and David Tonkin (The contributors' professional affiliations are listed on p 308)

The editors have organised the 13 chapters of the book into four parts (in addition to the introduction and conclusion) (1) teachers' careers (2) contexts (demographic economic and historical) of Australian teachers' careers. (3) issues and concerns and (4) proposals for reform

In the first part on teachers' careers. Rupert Maclean presents an analysis of the connection between careers in general and careers in teaching and Terri Seddon reports on key aspects of teachers' work as exemplified in contemporary NSW state schools

In the second part. Phillip McKenzie provides demographic information about teachers within the Australian population and workforce. Gerald Burke relates Australian economic policy to the work of teachers and schools and Andrew Spaull places the career structure for Australian teachers within a historical context

In the third part. contributors address a variety of issues including women's careers in teaching (Shirley Sampson). teachers' careers in rural schools (Bob Meyenn Ron Sinclair. Bob Squires). in independent schools (David Campbell) and in Catholic schools (Don Christie. Paula Smith). effects of age upon careers (Brian Howse). and the behaviour of teachers as they move through their careers (Rupert MacLean)

In the fourth part John Pederson addresses some problems and policy issues relating to teacher career planning. and David Tonkin relates trade unionism to the process of developing career options for teachers

This book is well done It makes a valuable contribution to the growing literature about teachers and teaching And it succeeds as a work in the educology of society

To elaborate on this last point this book is clearly a work in the educology of society because its authors examine how social economic and political arrangements affect teachers and teaching As part of the educology of society the book consists mainly of historical and scientific educology in that it addresses what has existed and what does exist in relation to Australian teachers' careers. However, there are some elements of analytic philosophical educology in the analysis of the concept of *teacher careers* and there are also some elements of normative philosophical educology in the suggestions and justifications of what reforms might be made in the career structures of teachers.

The book will obviously appeal to a readership of students and lecturers of the educology of society, of teachers and of teaching. It will also have appeal to comparative educologists, and it will have use in programs for the preparation of teachers and for the on-going development of mid-career teachers.

Editors

Teachers' Professional Development. Edited by Phillip Hughes. Hawthorne, Victoria: Australian Council for Educational Research, 1991. Pp. 308. Paper.

Teachers Professional Development is the first in a series of books being published by the Australian Council for Educational Research (ACER) about teachers and teaching. It is a companion piece to *Australian Teachers' Careers* (ACER, 1991) (the second in the series), and it addresses the issues of the appropriate processes to follow and the proper purposes for professional development of teachers.

The editor, Phillip Hughes, has distinguished himself through a long career in teacher education and teacher professional development in Australia. He has held senior positions in the Tasmanian State Education Department, the ACT Schools Authority, the Canberra College of Advanced Education (now the University of Canberra) and currently the University of Tasmania.

Phillip Hughes sets the scene in the first chapter by providing some historical context for professional development of teachers in Australia. Cherry Collins in the second chapter highlights some of the worthwhile achievements which Australia has made in programs of teacher professional development, and she identifies some of the challenges for future progress. In the third chapter, Michael Scriven argues cogently that the basis for teacher professional development must be teacher evaluation. In chapter four, Bob Connors identifies and explicates several dimensions of the process which constitutes teacher professional development. Bevis Yaxley in chapter five examines various approaches to research about teacher development and relates those approaches to the process of teacher development. In chapter six John Baird argues that the development of reflective thinking among teachers contributes to their professional development through helping them conceive sound purposes in their teaching. Terry Evans and Daryl Nation in chapter seven discuss the contributions which distance education makes to teacher professional development. Ray Costello concludes the book with an analysis of how government policy can be used to contribute to the process of teacher professional development.

Teachers Professional Development is clearly a work in educology in that it addresses the general problem of how the professional development of teachers might contribute to the improvement in the quality of teaching. As such, it is a valuable extension to the literature in the educology of teaching. The book encompasses the full range of educological perspectives. It examines a full range of educological questions, i.e.

(1) what is teacher professional development, a question in analytic philosophical educology;
(2) which teacher professional development programs are worthwhile, a question in normative philosophical educology;
(3) what teacher professional development programs have been pursued in the past, a question in historical educology;
(4) what teacher professional development programs are currently in operation, a question in scientific educology;
(5) which teacher professional development programs are effective in achieving desired results, a question in praxiological educology;
(7) which government policies are effective in achieving desired teacher professional development programs, a question in political praxiological educology.

This book is an important one to read for lecturers, professors, students and other readers interested in quality of teaching, quality of schools, educational policy, school management, teacher education and in-service teacher education.

Editors

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